

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 82**

**[FRL ]**

**RIN 2060-AM05**

**Protection of Stratospheric Ozone: Leak Repair Requirements for Appliances Using  
Substitute Refrigerants**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

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**SUMMARY:** The Environmental Protection Agency (EPA) is amending the rule on mandatory leak repair of appliances, promulgated under section 608 of the Clean Air Act (CAA or Act), to clarify how the requirements of section 608 extend to appliances using substitutes for chlorofluorocarbon (CFC) and hydrochlorofluorocarbon (HCFC) refrigerants. This final rule affects the owners and operators of comfort cooling, commercial refrigeration, and industrial process refrigeration (IPR) appliances with regard to leak repair provisions promulgated under section 608 of the Act. Certain aspects of this action will also affect federal owners and operators of commercial and comfort-cooling appliances normally containing more than 50 pounds of refrigerant. This rule supplements a statutory and self-effectuating prohibition on venting substitutes to the atmosphere that became effective on November 15, 1995 (i.e., section 608(c)(2) of the Act). EPA is amending the current leak repair requirements for refrigeration and air-conditioning equipment (i.e., appliances) containing CFC and HCFC refrigerants

to accommodate the proliferation of new refrigerants on the market. In addition to amending the leak repair requirements, this final rule extends the leak repair provisions of section 608 to appliances using substitutes consisting in whole or in part of a class I or class II ozone-depleting substance (ODS).

**DATES:** This final rule is effective on [INSERT DATE 60 DAYS from date of publication in the Federal Register].

**ADDRESSES:** Materials related to this rulemaking are contained in EPA Office of Air and Radiation (OAR) Docket OAR-2003-0167. Docket OAR-2003-0167 is the electronic version of the legacy OAR Docket No. A-92-01. All documents in the docket are listed in the docket index. Although listed in the index, some information is not publicly available, i.e., confidential business information (CBI) or other information whose disclosure is restricted by statute. Publicly available docket materials are available in hard copy at the OAR Docket at Room B108, 1301 Constitution Ave., NW; Washington, DC, 20460. This Docket Facility is open from 8:00 a.m. to 5:30 p.m., Monday through Friday, excluding legal holidays. The Docket telephone number is (202) 566-1742.

**FOR FURTHER INFORMATION CONTACT:** Information concerning this rulemaking should be forwarded to Julius Banks; U.S. Environmental Protection Agency; Global Programs Division-Stratospheric Program Implementation Branch; Mail Code 6205-J; 1200 Pennsylvania Avenue, NW; Washington, DC 20460. The Stratospheric Ozone Information Hotline (800-296-1996) and the Ozone webpage, [www.epa.gov/ozone](http://www.epa.gov/ozone), can also be reached for further information.

**SUPPLEMENTARY INFORMATION:** The contents of this action's preamble are listed in the following outline:

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## I. GENERAL INFORMATION

### A. Does This Action Apply to Me?

Entities potentially regulated by this action include those who own, operate, maintain, service, or repair comfort cooling, commercial refrigeration, and industrial process refrigeration appliances.

Regulated entities include:

Category	Examples of regulated entities
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Industry	Technicians who service, maintain, repair, air-conditioning and refrigeration equipment
	Owners and operators of comfort cooling, commercial refrigeration, and industrial process refrigeration equipment

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated and potentially affected by this action. Other types of entities not listed in the table could also be affected. To determine whether your company is regulated by this action, you should carefully examine the applicability criteria contained in section 608 of the CAA Amendments of 1990. The applicability criteria are discussed below and in regulations published on December 30, 1993 (58 FR 69638). If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

## **B. How can I get copies of related information?**

### ***1. Docket***

EPA has established an official public docket for this action at OAR Docket ID No. OAR-2003-0167. The official public docket consists of the documents specifically referenced in this action and other information related to this action. Hard copies of documents related to previous refrigerant recycling and emissions reduction rulemakings and other actions may be found in legacy EPA Air Docket ID No. A-92-01. The public docket does not include Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. The public docket is available for viewing

at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Air and Radiation Docket is (202) 566-1742. EPA may charge a reasonable fee for copying docket materials.

## ***2. Electronic Access***

An electronic version of the public docket is available through EPA's electronic public docket and comment system, "EPA Dockets." You may use EPA Dockets at [www.epa.gov/edocket](http://www.epa.gov/edocket) to view public comments, access the index listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. Once in the system, select "search," then key in the appropriate docket identification number.

## **II. OVERVIEW**

Effective November 15, 1995, section 608(c)(2) of the Act prohibits the knowing venting, release, or disposal of any substitute for CFC and HCFC refrigerants by any person maintaining, servicing, repairing, or disposing of air-conditioning and refrigeration equipment. This prohibition applies unless EPA determines that such venting, releasing, or disposing does not pose a threat to the environment.

On June 11, 1998, EPA proposed (63 FR 32044) to strengthen the existing leak repair requirements for commercial, comfort cooling, and industrial process refrigeration (IPR) appliances containing CFCs and HCFCs. Tightening of the leak rates was proposed because EPA believed that

manufacturer design changes have lowered achievable leak rates. EPA also proposed to extend the leak repair requirements to appliances using substitutes that the Agency did not propose to exempt from the statutory venting prohibition (i.e., hydrofluorocarbon (HFC) and perfluorocarbon (PFC) substitutes).

Today's final rule clarifies how the leak repair requirements apply to substitutes for class I and class II ODSs. Today's final rule also extends the leak repair requirements to appliances containing HFC blends that contain an ODS. However, today's rule does not finalize the proposals to tighten the existing leak repair trigger rates or extend the leak repair requirements to substitutes that do not contain an ODS.

#### **A. Section 608 of the Clean Air Act**

Section 608 of the CAA requires EPA to establish a comprehensive program to limit emissions of ozone-depleting refrigerants. Section 608 also prohibits the knowingly venting or otherwise knowingly release or disposal of ozone-depleting refrigerants and their substitutes during the maintenance, service, repair, or disposal of air-conditioning and refrigeration appliances.

Section 608 is divided into three subsections. In brief, the first, section 608(a), requires EPA to promulgate regulations to reduce the use and emission of class I substances (i.e., CFCs, halons, carbon tetrachloride, and methyl chloroform) and class II substances (HCFCs) to the lowest achievable level, and to maximize the recycling of such substances. Second, section 608(b) requires that the regulations promulgated pursuant to subsection (a) contain requirements for the safe disposal of class I and class II substances. Finally, section 608(c) establishes self-effectuating prohibitions on the knowingly venting,



release or disposal into the environment of any class I or class II substances, and eventually their substitutes, during servicing and disposal of air-conditioning or refrigeration appliances.

Section 608(a) provides EPA authority to promulgate the requirements in today's rule. Section 608(a) requires EPA to promulgate regulations regarding use and disposal of class I and II substances to "reduce the use and emission of such substances to the lowest achievable level" and "maximize the recapture and recycling of such substances." Section 608(a) further provides that "such regulations may include requirements to use alternative substances (including substances which are not class I or class II substances) . . . or to promote the use of safe alternatives pursuant to section [612] or any combination of the foregoing" EPA's authority to promulgate regulations regarding use of class I and II substances (including requirements to use alternatives) is sufficiently broad to include requirements on how to use alternatives.

Section 608(c) provides in paragraph (1) that, effective July 1, 1992, it is "unlawful for any person, in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration, to knowingly vent or otherwise knowingly release or dispose of any class I or class II substance used as a refrigerant in such appliance (or industrial process refrigeration) in a manner which permits such substance to enter the environment." The statute exempts from this prohibition "[d]e minimis releases associated with good faith attempts to recapture and recycle or safely dispose" of a substance. To implement and enforce the venting prohibitions of this section, EPA through its regulations interprets releases to meet the criteria for exempted de minimis releases when they occur while the recycling and recovery requirements of sections 608 and 609 regulations are followed (§82.154(a)).

EPA is promulgating leak repair regulations to implement and clarify the requirements of section 608(c)(2), which extends the prohibition on venting to substitutes for CFC and HCFC refrigerants. These regulations also carry out its mandate under section 608(a) to minimize emissions of ozone-depleting substances to the lowest achievable level.

## **B. Notice of Proposed Rulemaking (NPRM) Regarding Recycling of Substitutes for CFC and HCFC Refrigerants**

On June 11, 1998, EPA published an NPRM (63 FR 32044) outlining requirements for substitutes for CFC and HCFC refrigerants. In that notice, EPA proposed regulations under section 608 of the Act to amend the leak repair requirements and reporting and recordkeeping requirements of 40 CFR §82 subpart F (promulgated under section 608 of the Act).

In the NPRM, EPA proposed to extend the leak repair requirements for ozone-depleting CFC and HCFC refrigerants to substitutes including pure and blended HFC and PFC substitutes. The proposal would have required owners or operators of appliances with substitute refrigerant charges greater than 50 pounds to repair leaks, and in some cases retrofit or replace appliances, when the applicable annual leak repair rate was exceeded. Based on improvements in equipment design and maintenance that have reduced leak rates, EPA also proposed to reduce the maximum allowable leak rates for appliances containing more than 50 pounds of refrigerant. The proposal would have also extended the proposed lower leak rate to appliances using substitutes.

The NPRM asked for public comment on the Agency's proposals and on the rationale behind them. The Agency received 167 public comment letters (comments) in response to all aspects of the

NPRM. In general, most commenters recognized the need for mandatory recovery of substitutes in order to help protect the ozone layer and to provide a source of refrigerant to service existing capital equipment after the phaseout of CFC and HCFC refrigerant production is complete. The majority of commenters believed that the proposed amendments would clarify the refrigerant regulations, but many expressed concerns over the regulation of refrigerants that do not deplete the ozone layer.

Today's final rule addresses the public comments received in response to the proposed rule as they relate to the leak repair requirements. Other aspects of the final rule, specifically, the applicability of the venting prohibition and the refrigerant sales restriction were addressed in a separate final rulemaking (69 FR 11946; March 12, 2004). The proposed requirements for the certification of refrigerant recovery/recycling equipment will be addressed in a separate rulemaking.

### **III. FINAL RULE**

#### **A. Overview**

On March 12, 2004 (69 FR 11946), EPA published a final rule extending a number of the required practices at §82.156 to substitutes consisting of an ODS. These changes were intended to accommodate the growing number of refrigerants, including newer blended HFC/HCFC substitutes that are subject to the regulations because they consist of a class II ODS. Such changes included the adoption of evacuation requirements based solely on the saturation pressures of refrigerants, the requirement for service apertures on appliances, and mandatory certification of service technicians.

In this rule, EPA did not finalize the proposal to extend all of the regulations concerning emissions reduction of CFC and HCFC refrigerants, at 40 CFR part 82, subpart F, to pure HFC and

PFC substitutes. The rule did not mandate any of the following proposed requirements from the NPRM: a sales restriction on HFC or PFC substitutes that do not consist of an ODS; specific evacuation levels for servicing appliances containing HFC or PFC substitutes that do not consist of an ODS; certification of recycling and recovery equipment intended for use with appliances containing HFC or PFC substitutes that do not consist of an ODS; certification of technicians who maintain, service, or repair appliances containing HFC or PFC substitutes that do not consist of an ODS; reclamation requirements for used HFC or PFC substitutes that do not consist of an ODS; certification of refrigerant reclaimers who reclaim only HFC or PFC substitutes that do not consist of an ODS; or leak repair requirements for appliances containing more than 50 pounds of HFC or PFC substitutes that do not consist of an ODS.

Today's final rule amends the leak repair regulations at subpart F covering CFC and HCFC refrigerants, and extends these requirements to owners or operators of appliances containing substitutes that consist of a class I or class II ODS. EPA is finalizing the proposed amendments to the leak repair requirements at §82.156(i), the associated recordkeeping provisions at §82.166(n) and (o), the definition of "full charge" at §82.152; and adding a definition for "leak rate" at §82.152. EPA also describes compliance scenarios to address inquiries concerning whether or not leaks that occur after repairs have been completed and all applicable verification tests have been successfully performed are considered a new leak occurrence for the appliance.

EPA is not finalizing the proposal to extend the leak repair requirements to owners or operators of appliances using HFC or PFC substitutes that do not contain a class I or class II ODS. The Agency is not finalizing the proposal (63 FR 32066; June 11, 1998) to lower the permissible leak rates for air-

conditioning and refrigeration appliances containing more than 50 pounds of an ODS refrigerant or to extend these requirements to appliances using HFC and PFC substitutes.

## **B. Definitions**

### *1. Full Charge*

Compliance with the leak repair requirements requires calculating both the full charge of the appliance and the leak rate. EPA has previously defined full charge at §82.152 as the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the four methods specified at §82.152. In the NPRM, EPA proposed to eliminate the phrase “for the purposes of §82.156(i)” and the word “all” from paragraph (2) in the definition of full charge at §82.152.

EPA did not receive any comments concerning the removal of the phrase “for the purposes of §82.156(i)” and the word “all” from paragraph (2) in the definition of full charge at §82.152. EPA did receive comments on the definition of “full charge” that were outside of the scope of the proposed changes.

EPA received no adverse comments to the proposed editorial change; therefore, EPA is finalizing the proposal to eliminate the phrase “for the purposes of §82.156(i)” and the word “all” from paragraph (2) in the definition of full charge at §82.152, because the term and the phrase are implicit in that language. EPA believes that these changes will improve the readability of the provision by eliminating redundancy.

The NPRM did not propose to alter the means by which the owner or operator could

determine the full charge of the appliance. The edits were proposed to add clarity to the definition without changing the means by which “full charge” can be determined. Owners or operators of appliances are still required to use one or a combination of the four methods to determine the full charge of appliances. Full charge means the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one of the following four methods or a combination of one of the following four methods:

- (1) The equipment manufacturers' determination of the correct full charge for the equipment;
- (2) Determining the full charge by appropriate calculations based on component sizes, density of refrigerant, volume of piping, and all other relevant considerations;
- (3) The use of actual measurements of the amount of refrigerant added or evacuated from the appliance; and/or
- (4) The use of an established range based on the best available data, regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge, and where records are maintained in accordance with §82.166(q).

Hence EPA has provided flexibility in determining the full charge for appliances under “normal operating characteristics.” The onus is on the owner or operator of the appliance to determine the full charge by using one or a combination of the four methods listed in the definition of *full charge* at §82.152. The leak rate then determines what actions are required by the appliance owner or operator in order to remain in compliance with the leak repair requirements of §82.156.

## 2. *Leak Rate*

EPA has not previously promulgated a formal definition for leak rate. In the NPRM, EPA

proposed to define leak rate for the purposes of applying leak repair requirements in §82.156(i) for industrial process refrigeration, comfort cooling and commercial appliances. EPA proposed to add a definition in the regulations for clarity, and to address some of the issues raised by the regulated community concerning calculating leak rates in order to comply with the leak repair requirements contained in §82.156(i).

EPA and the Chemical Manufacturers' Association (CMA) jointly issued a compliance guide for leak repair in October 1995. That guide, known as the *Compliance Guidance For Industrial Process Refrigeration Leak Repair Regulations Under section 608 of the Clean Air Act* (Compliance Guidance), includes a section on calculating leak rates. The Compliance Guidance states that each time the owner or operator adds refrigerant to an appliance normally containing 50 pounds or more of refrigerant, the owner or operator should promptly calculate the leak rate to ensure that the appliance is not leaking at a rate that exceeds the applicable allowable leak rate. If the amount of refrigerant added indicates that the leak rate for the appliance is above the applicable allowable leak rate, the owner or operator must perform corrective action by repairing leaks, such that appliances do not continue to leak above the applicable leak rate, retrofitting the appliance, or retiring<sup>1</sup> the appliance in accordance with the requirements of §82.156(i).

The Compliance Guidance specifically mentions two methods for calculating leak rates. The first method is referred to as the "annualizing method," because it takes the quantity of refrigerant (percentage of charge) lost between charges and scales it up or down to calculate the quantity that

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<sup>1</sup>EPA considers retirement of an appliance as an action to permanently remove the appliance from operation.

would be lost over a year-long period. This method is described in the Compliance Guidance as follows:

- (1) take the number of pounds of refrigerant added to the appliance to return it to a full charge and divide it by the number of pounds of refrigerant that the appliance normally contains at full charge;
- (2) take the number of days that have passed since the last day refrigerant was added and divide by 365 days;
- (3) take the number calculated in step (1) and divide it by the number calculated in step (2); and
- (4) multiply the number calculated in step (3) by 100 to calculate a percentage.

EPA's section 608 annualizing method is summarized in the following formula:

$$\text{Leak rate} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365 \text{ days/year}}{\text{shorter of: \# days since refrigerant last added or 365 days}} \times 100\%$$

(% per year)

The second method for calculating leak rates discussed in the Compliance Guidance is the “rolling average” method. The term “rolling average” is not defined in the Compliance Guidance, but EPA proposed (63 FR 32057) to calculate it by:

- (1) taking the sum of the quantity of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since leaks in the appliance were last repaired, if that period is less than one year);
- (2) dividing the result of step one by the quantity (e.g., pounds) of refrigerant the appliance normally contains at full charge; and
- (3) multiplying the result of step two by 100 to obtain a percentage.



EPA's section 608 rolling average method is summarized in the following formula:

$$\text{Leak rate} = \frac{\begin{array}{l} \text{pounds of refrigerant added over past 365 days} \\ \text{(or since leaks were last repaired,} \\ \text{if that period is less than one year)} \\ \text{pounds of refrigerant in full charge} \end{array}}{\text{(% per year)}} \times 100\%$$

In the NPRM, EPA considered four options for the formal definition of "leak rate." The first option was to require appliance owners or operators to calculate leak rates using only the "annualizing" method. The second proposed method was to exclusively use EPA's Rolling Average Method. The third proposed method was to use whichever method yielding the highest leak rate. The fourth proposed method was to allow appliance owners or operators to use either method of their choosing provided the same method is used consistently for all appliances located at the facility. Discussion of the comments and EPA's decision on these options are detailed below.

*a. Comments on Option 1 - Use of Annualizing Method*

The first proposed option requiring owners or operators to exclusively use the annualizing method received support from commenters, but with some concern. Commenters generally expressed a comfort level with the annualizing method, and consistently noted its acceptance by CMA and EPA. However, several commenters expressed concern over the projection of the leak rate over a 12-month period. A trade group representing the commercial food sector expressed concern that the proposed leak rate definition generates a total representing an amount that would have been lost per 12-month period had the leak/s not been repaired rather than the amount of refrigerant actually released in each instance prior to repair.

The proposed annualizing method does include the actual amount of refrigerant added to the

appliance in its calculation of the leak rate, but projects or “annualizes” the leak rate by considering the amount of time that has passed between refrigerant charges. EPA understands commenters’ concerns. For instances where owners or operators have leaking appliances that continue to require addition of refrigerant, the annualizing method may result in a higher leak rate than other possible calculations that fail to annualize over a 12-month period, by looking at the leak as a one time event and a simple ratio of refrigerant added versus the full charge. Taking such an approach would allow for continued patterns of repair attempts followed by refrigerant recharge and subsequent release. Such a pattern is not viewed by EPA as advantageous to the environment since the total amount of refrigerant release is compounded over time. The leak repair amendments are aimed at preventing such patterns and requiring owners or operators to sufficiently repair or replace/retrofit appliances that cannot be sufficiently repaired.

EPA believes that the first method (i.e., exclusive use of the annualizing method) has the advantage of being relatively simple and familiar. As a result of the compliance guidance, EPA believes that many owners or operators are familiar with the method and have incorporated the methodology into their manual and computerized refrigerant tracking systems and standard operating procedures dealing with repair of refrigerant leaks. However, EPA believes that the preferred approach is to provide appliance owners or operators with greater flexibility in calculating the “leak rate.” Hence EPA is not mandating exclusive use of the annualizing method in defining the leak rate.

*b. Comments on Option 2- Use of EPA’s Rolling Average Method*

Commenters were generally opposed to the second proposed option that requires owners or operators to calculate leak rates using only the “rolling average” method, because they believed it

resulted in elevated leak rates when compared to calculating the leak rate with the annualizing method. Commenters stated that under this method owners of such appliances may be required to repair an appliance that has actual leak rates below accepted limits. As examples, commenters cautioned: 1) that the proposed formula would artificially elevate the leak rates on appliances with large reserve capacity; and 2) that if the number of days since refrigerant was last added to the system is more than 365 days, the percent leak rate is artificially elevated, and may require a system to be repaired when there may be no substantial leak. An additional commenter noted that while the compliance guidance mentions the “rolling average” method, it was not defined until the NPRM proposed a definition which may have caused some inconsistency between industry practice and the proposed definition.

Several commenters expressed concern over the Agency’s use of 365 days in the proposed option to include the rolling average method in the definition of leak rate. Commenters stated their interpretation that in order for the rolling average method to work, the last time refrigerant was added to a system has to be less than 365 days. They also stated that in order to calculate a true leak rate the operator must know both how much refrigerant was lost and over what period of time that loss occurred. One commenter stated that the time period must always equal the interval between the realization of a leak and the last time refrigerant was added in order to restore the system to its normal operating charge, thus making the number 365 useless. Several commenters objected to the rolling average method based on their understanding that the calculation assumes that all leaks have occurred within the past 365 days. The commenters stated that leak repairs occur whenever operators find them, not on a set schedule (e.g., every 365 days). Commenters also stated that appliances with large reserve capacities could be negatively impacted since the full charge may not coincide with the

operating charge.

EPA believes that the second method (i.e., exclusive use of the rolling average method) is relatively simple and catches certain leaks (such as the sudden fast leak described in the previous paragraph) more quickly than the annualizing method. The disadvantage of the rolling average method is that it permits owners or operators to delay repair of certain types of leaks longer than the annualizing method and may not show that appliances are leaking until they have lost a relatively large percentage of charge; however, EPA does not find that this method artificially inflates leak rates for appliances with large reserve capacities. Appliance owners or operators have four options to determine the full charge and have opportunity to take reserve amounts under consideration when determining the full charge.

EPA is not requiring owners or operators to determine the amount of refrigerant that has leaked from the appliance since the last repair, but the owner or operator must determine how much refrigerant has been added to the system within the past 12-month period or the number of days since refrigerant was last added in order to calculate the leak rate using the rolling average method. The time period of 365 days is meant to cover all additions of refrigerant to the appliance over a consecutive 12-month period, and does not imply that leaks only occur once per year or on any particular schedule. EPA is aware that many owners or operators repair appliances as soon as they realize that the appliance is not functioning properly; however, the goal of the leak repair requirements is to require owners or operators to take action on chronic leakers that require repair on a frequent basis. The 365-day time frame has significance, because it “annualizes” the leak rate of the appliance over a consecutive 12-month period, and requires operators and owners or operators to take action to repair, retrofit, or replace leaking appliances.

In the NPRM, EPA noted that the second option was not preferable but wished to provide notice and comment on the proposed options for the definition of “leak rate.” Based in part upon comments received, and the Agency’s desire to provide more flexibility to owners or operators in determining leak rates, EPA has decided to not finalize the second option requiring exclusive use of the “rolling average” in calculating the leak rate.

*c. Comments on Option 3- Use of the Method Yielding the Highest Leak Rate*

EPA noted in the NPRM (63 FR 32058) that the third option, requiring use of whichever method yields the higher calculated leak rate, was its preferred option. This option is a more complicated approach (both for compliance and enforcement) than requiring the use of either method alone, but ensures that leaks are caught and addressed as quickly as possible.

Commenters were generally opposed to the proposed third option of calculating leak rates by whichever method yielded a higher leak rate, because it would be more burdensome on equipment owners or operators and EPA enforcement personnel because it requires facilities to calculate leak rates using both methods and maintain supporting documentation for both. Several commenters felt that if EPA were to finalize this option, that the Agency should provide multiple formula choices, thereby making the regulation more workable for business while allowing the Agency to meet its objective of reducing leaks.

EPA is not finalizing the third proposed method for calculating the annual leak rate. EPA believes that the third proposed method does not provide a level of flexibility that is warranted for diverse appliances used in the commercial and IPR sectors. EPA has reconsidered the possible burden placed upon owners or operators who would be required to calculate leak rates using both methods

and maintain records on both of the methods used to calculate leak rates. The enforcement of such a requirement would also be more difficult as EPA enforcement personnel would have to review multiple leak repair methods for different appliances located at the same facility. Therefore, EPA is not finalizing the third proposed method for calculating the annual leak rate. However, EPA is not opposed to considering additional methodologies for calculating or defining the leak rate, and may propose alternative methodologies in future rulemakings.

*d. Comments on Option 4- Owners or Operators Leak Rate Method of Choice*

The fourth option proposed to permit owners or operators to calculate leak rates using either method, so long as the same method is always used for the same appliance, facility, or firm. While the majority of commenters preferred the fourth option over the other three options, a few commenters objected to the specification of a method for calculating annual leak rates and argued that the Agency's method for calculating leak rates should be revised to allow owners and operators of the equipment to use any method that is technically sound and consistently used for determining annual leak rates. The commenter noted that this would address situations where the EPA/CMA methods do not permit the accurate determination of leak rates. One commenter believed that the Agency should provide two or three formula choices, which would make the regulation more workable for business and allow the Agency to meet its objective of reducing leaks. The commenter stated that appliance owners and operators have economic and quality control incentives to monitor and control leaks and should be afforded maximum flexibility in calculating leak rates to ease and facilitate compliance. Another commenter noted that if employed, this method should not require use of the same method beyond the site or facility, since such a requirement could lead to the disruption of established programs.

EPA did not propose additional methods of calculating the leak rate for incorporation into the proposed definition at §82.152. EPA emphasizes that the onus is on the owner or operator of the appliance to determine the leak rate (as defined at §82.152) upon addition of refrigerant. If they fail to do so, owners or operators would have no way of knowing what actions are required to remain in compliance with the leak repair requirements.

EPA finds that while permitting appliance owners or operators to select either of the two methods of their choice to calculate the leak rate is somewhat more complicated, but could be easier for owners or operators to comply with if they have more experience with one method than the other. Both the annualizing and rolling average methods eventually catch all leaks above the maximum allowable rate. Because appliance owners or operators using the rolling average method would be doing so at their discretion, this approach neutralizes any equity concerns associated with that method. EPA believes that this option provides flexibility to owners or operators of appliances and permits them to choose whichever method they prefer. Furthermore, this option addresses any concerns about ambiguity or inconsistencies concerning the inclusion of the term “rolling average” in the definition of leak repair and owners or operators are likely to have more experience with one method than the other. Both the annualizing and the EPA’s rolling average methods catch all leaks above the maximum allowable rates. While EPA prefers the use of the annualizing method, this fourth option allows owners and operators to use the method of their choice and neutralizes any equity concerns associated with either method.

Therefore, with this action, EPA is defining leak rate using the fourth option which allows appliance owners or operators to use either of the two methods of their choice, provided the option

chosen is used consistently for calculating leak rates for the lifetime of all appliances located at an operating facility that are subject to the leak repair requirements. EPA is also requiring the owner or operator to promptly calculate the leak rate each time an owner or operator adds refrigerant to a system normally containing more than 50 pounds of refrigerant.

### **C. Required Practices for Leak Repair**

In the NPRM, EPA proposed to lower the permissible leak rates for some air-conditioning and refrigeration appliances containing more than 50 pounds of CFC and HCFC refrigerant. EPA also proposed to extend the leak repair requirements (as they would be amended) to air-conditioning and refrigeration appliances containing more than 50 pounds of HFC and PFC substitutes.

EPA proposed to lower the permissible annual leak rate for new commercial refrigeration appliances to 10 percent of the charge per year, the permissible annual leak rate for older commercial refrigeration appliances to 15 percent per year, the permissible annual leak rate for some IPR appliances to 20 percent of the charge per year, the permissible annual leak rate for other new appliances (e.g., comfort cooling chillers) to 5 percent of the charge per year, and the permissible annual leak rate for other existing comfort cooling appliances to 10 percent of the charge per year.

#### *1. Comfort Cooling Appliances*

EPA proposed to lower the leak rates based on indications from appliance manufacturers that reductions in leak rates have been most dramatic in comfort cooling chillers, where leak rates have been lowered from between 10 and 15 percent per year to less than 5 percent per year in many cases. In the NPRM, EPA noted that based on information provided by



equipment manufacturers that design changes and leak detection technologies warranted the proposal to lower leak rates. EPA referenced several design changes, such as installation of high-efficiency purge devices on low-pressure chillers, the installation of microprocessor-based monitoring systems that can alert system operators to warning signs of leakage (such as excessive purge run time), the use of leak-tight brazed rather than leak-prone flared connections, and the use of isolation valves, which permit technicians to make repairs without evacuating and opening the entire refrigerant circuit. In addition, EPA noted that the reported leak rates for new chillers all fall below 5 percent with the exception of the open-drive type of high pressure chiller which has reported leak rates between 4 and 7 percent. EPA requested comment on whether EPA should set a larger leak rate for this type of chiller.

The majority of commenters were opposed to any effort to tighten the existing leak rates for comfort cooling appliances. Several commenters supported lower permissible leak rates for comfort cooling appliances containing more than 50 pounds of refrigerant, but only to a 20-25%. Several commenters opposed applying more stringent leak repair rates to older appliances, noting that the proposed leak rates (63 FR 32066) would be feasible only for some primary systems associated with secondary fluid systems and would not be feasible for most comfort cooling appliances. Another commenter claimed that the Agency failed to provide any facts to support a finding that the regulated community could locate and detect the small leaks. The commenter felt that at a permissible leak rate of 5 percent, small and perhaps undetectable leaks would become significant since they may result in an appliance leaking above the proposed 5 percent leak rate.

Some commenters requested that the Agency consult with appliance owners or operators to determine if their experiences confirm original equipment manufacturers' claims on the leak tightness of

newer refrigeration and air-conditioning systems before finalizing tighter leak rates that may not be practical. The commenter suggested that separate leak rate criteria be created for new site-assembled refrigeration units and chillers versus such equipment assembled in factories.

Several commenters stated that more stringent rates for older appliances would cause financial and operational burdens on owners or operators, partially because many older systems were not designed to accommodate devices that reduce emission losses to the proposed level. Specifically, medium and high-pressure appliances for which retrofit high-efficiency purge systems are not available were of particular concern. One commenter suggested that lowering the permissible leak rate for newer comfort cooling units to 5 percent goes beyond the “lowest achievable level” of emissions reductions required by §608(a)(3)(A). The commenter pointed out that as these new units age, their leak rates will inherently increase.

In response to comments EPA notes that the intent of the leak repair regulations is to require owners or operators to maintain appliances over their life-span. EPA recognizes that these appliances may leak with greater frequency as they age. By promulgating these regulations, EPA intends to minimize refrigerant releases by requiring owners or operators to take actions to maintain appliances as they age or retire or replace inherently leaking appliances. Replacement of leaking appliances has the benefit of use of newer appliances that in general tend to have lower refrigerant charges and fewer leak occurrences. These efforts insure that refrigerant emissions are minimized to the lowest achievable level, in accordance with section 608 of the Clean Air Act.

EPA believes that additional data on historical repair trends and leak tightness of comfort cooling appliances are warranted prior to lowering the leak rates. EPA intends to initiate efforts to

gather data on the availability and effectiveness of current leak detection methods and equipment prior to amending the leak repair trigger rates. Therefore, as a part of today's action, EPA is not finalizing the proposal to lower the permissible leak rates for comfort cooling appliances containing more than 50 pounds of refrigerant to 5 and 10 percent of the charge per year for new and existing appliances, respectively.

## *2. Commercial Refrigeration*

In the NPRM, EPA proposed that the maximum permissible leak rate for new commercial refrigeration equipment (commissioned after 1992) be lowered to 10 percent per year, and that the maximum rate for old commercial refrigeration equipment (commissioned in or before 1992) be lowered to 15 percent per year.

EPA based the proposal to lower the leak rate in part on a study sponsored by EPA's Office of Research and Development (ORD). The ORD study analyzed two detailed bodies of data on leakage from commercial refrigeration equipment, one collected by a Midwestern chain of 110 stores and the other gathered by the South Coast Air Quality Management District (SCAQMD), which requires monitoring and reporting of leak rates from large refrigeration systems. The Midwestern chain achieved an average leak rate of 15 percent by establishing written procedures for equipment installation (including a requirement for brazed or "sweated" expansion valves), a refrigerant monitoring system, and an equipment inspection protocol. This rate was achieved in 1992, before EPA's leak repair requirements were even in effect. The data collected by SCAQMD was based upon 440 recharging and leak testing events from 56 different stores representing 20 different businesses. The average leak rate achieved by the stores was eight (8) percent of the total charge.

The ORD report also investigated the cost-effectiveness of different strategies and technologies for reducing leak rates, finding that many of these approaches could lower leak rates significantly and thereby pay for themselves. The report indicated that by using a combination of these approaches, a number of chains had significantly reduced both overall refrigerant consumption and leakage from equipment over the previous two to eight years. Some of the most effective approaches included vibration elimination devices, use of high-quality brazed rather than mechanical connections, low emission condensers, stationary leakage monitors, refrigerant tracking and improved preventive maintenance. A few of the approaches, such as installation of low-emission condensers, were more applicable to new than to existing appliances; however, many of the approaches, such as refrigerant monitors, refrigerant tracking systems, and improved preventive maintenance, were applicable to both existing and new appliances. According to the report, these approaches were individually expected to reduce leak rates from appliances by between 5 and 40 percent of the charge per year.

EPA requested comment on the proposed rates, and whether the relatively low leak rates observed in new equipment are likely to persist throughout its lifetime, or whether those rates are likely to rise over its lifetime to approach the current leak rates of older equipment. EPA also requested comment on whether higher or lower rates might be appropriate for different types of commercial refrigeration equipment, given that compressor rack systems, single compressor systems, and self-contained units may have significantly different average leak rates. Finally, EPA requested comment on whether significant percentages (e.g., 10 percent or more) of the various types of commercial refrigeration equipment may be able to comply with leak rates of 10 or 15 percent without being totally replaced, and, if this is the case, whether permissible

leak rates of 15 and 20 percent might be more achievable.

In general, commenters were opposed to the proposed reduction in the maximum permissible leak rate for commercial refrigeration appliances. Commenters were concerned that the two studies used to set the new leak rates for commercial refrigeration units with charges greater than 50 pounds excluded small businesses and ignored the differences between new and old equipment. One commenter stated that the two studies cited by the Agency do not show that all refrigeration systems can achieve the proposed leak rates, nor do they show that any regulatory requirements are needed. The commenter noted that the study did not comprise a statistically significant sample, and the information from these studies would apply to only a limited subset of existing and future refrigeration systems. Another commenter stated that the case studies referenced in the study summarize anecdotal and limited data by concentrating on best management practices to reduce maintenance costs instead of the ability for grocers to adhere to the proposed lower leak rates. The commenter stated that the NPRM would also have negative financial implications upon small independent grocers.

Commenters stated that, leaks occur at seals and O-rings and are the result of normal wear, tear, stress, and vibration. The commenter noted that due to the nature of the commercial sector that grocers become aware of such leaks almost immediately because the equipment owner faces the cost of replacing lost refrigerant and the loss of perishable goods. Commenters also stated that depending on store design, leak detection can be costly, difficult, and sometimes labor intensive. Commenters stated that EPA should not attempt to dictate the type of commercial appliance used (e.g., open-drive compressors or direct expansion systems rather than hermetic compressors and secondary loop systems) in order to justify lowering the leak rates.

EPA received comment that tightening of leak rates for the commercial sector would negatively impact small independent grocers. Commenters noted that the life expectancy of a refrigerant case is typically 20-25 years and argued that the rule will require many independent grocers to purchase new commercial refrigeration equipment to lower their annual leak rates to comply with the new requirements. A commenter explained that for those grocers still legally using older CFC-based equipment, that it may be impossible to attain a 10 or 15 percent leak rate. The only viable options would be for the grocers to either close or purchase new equipment.

EPA acknowledges that neither of the studies differentiated between new and old appliances. The cited studies include in their analyses commercial refrigeration appliances that are commonly available in the commercial sector. EPA does not believe that the type of appliance available and covered under the leak repair regulations differs depending on the classification of the business owner as an independent grocer. According to commenters, smaller independent grocers may rely on older appliances, but EPA does not find a persuasive rationale to allow older appliances to continue to leak at high rates because they are aging. EPA agrees that owners or operators of commercial refrigeration appliances have an economic incentive to repair leaks as soon as they are discovered. However, EPA finds that continued patterns of repair attempts followed by refrigerant recharges are not optimal for environmental protection. This is especially true for appliances that may be described as “chronic leakers.” The intent of the leak repair regulations is to require owners or operators to sufficiently repair appliances (especially as appliances age) so that they will not develop a history of leak events, or retrofit or replace appliances that cannot be sufficiently repaired. EPA is not mandating the use of any specific leak detection equipment, but believes that the use of detection equipment is one means of

preventing losses resulting in extensive repair and use of ozone-depleting refrigerants, in both older and newer appliances.

EPA believes that additional data on historical repair trends and leak tightness of commercial refrigeration appliances is warranted prior to lowering the leak rates. EPA intends to initiate efforts and seek cooperation from organizations representing the commercial refrigeration sector to gather data on the availability and effectiveness of current leak detection methods and equipment prior to amending the leak repair trigger rates. Therefore, as a part of today's action, EPA is not finalizing the proposal to lower the permissible leak rates for commercial appliances containing more than 50 pounds of refrigerant.

Since EPA is not finalizing a lowering of the leak rate, there is no need to finalize the proposal of a two-tier leak rate based upon the date of manufacture, compressor configuration, and possession (or lack) of a secondary loop in determining maximum allowable leak rates. The Agency may address the proposal to lower the applicable leak repair trigger rates by reproposing, in a future NPRM, a lower leak rate for commercial refrigeration appliances.

### *3. Industrial Process Refrigeration (IPR)*

The conditions that contribute to a wide range of leak rates in the commercial refrigeration sector apply even more to the industrial process refrigeration sector. Appliances in the industrial process refrigeration sector are not only assembled on-site, but are often custom-designed for a wide spectrum of processes and plants, giving the sector an extraordinarily broad range of appliance configurations and designs. Appliances may be high- or low-pressure; may possess hermetic, semi-hermetic, or open-drive compressors; may use one (primary) or two (primary and secondary)

refrigerant loops; maybe brand new or decades old; and may range in charge size from a few hundred to more than 100,000 pounds of refrigerant. All of these factors are important in determining leak rates, leading to a wide range of attainable leak rates.

In the NPRM, EPA stated that industrial process refrigeration equipment built more recently has generally been designed to leak less than equipment built earlier. Thus, EPA proposed to consider the date of manufacture, compressor configuration, and possession (or lack) of a secondary loop in determining maximum allowable leak rates for industrial process refrigeration appliances. The proposal did not include provisions for higher leak rates for appliances with very large charge sizes, because a given leak rate in large appliances causes more environmental harm than the same leak rate in small appliances. For example, a 20 percent annual leak rate in an appliance with a 10,000 pound charge would result in the release of 2,000 pounds of refrigerant per year, while a 20 percent annual leak rate in an appliance with a 1,000 pound charge would result in the release of 200 pounds of refrigerant per year. Although it may be more difficult or expensive to achieve a given leak rate in large appliances than in small appliances, EPA believed that these additional efforts were warranted by the larger environmental impact of leaks from large appliances. In view of these considerations, EPA proposed different maximum permissible leak rates based on the appliance's date of manufacture, compressor configuration, and number of refrigerant loops (primary only vs. primary and secondary).

Under the proposed approach, industrial process refrigeration appliances would have been subject to a 20 percent per year maximum permissible leak rate unless it met all four of the following criteria:

- (1) The refrigeration system is custom-built;



- (2) The refrigeration system has an open-drive compressor;
- (3) The refrigeration system was built in 1992 or before; and
- (4) The system is direct-expansion (contains a single, primary refrigerant loop).

Systems that met conditions 1, 2, 3, and 4 would continue to be subject to the 35-percent-per-year maximum permissible leak rate.

The Agency requested comment on the approach, both on the criteria used to sort appliances between the 20 percent and 35 percent per year rates, and on the rates themselves. EPA specifically requested comment on whether it might be appropriate to permit a higher leak rate for appliances with a charge size above 10,000 pounds that were built before 1992. EPA also sought comment on whether it would be appropriate to use a measure other than charge size (such as pipe length) to characterize sprawling, inherently leaky appliances.

In general commenters were opposed to any effort by EPA to lower leak rates for IPR appliances. Commenters noted that refrigeration operators have already lowered leak rates as much as possible due to the high cost of refrigerant, potential cost of lost productivity, maintenance costs, and efficiency. Most commenters based their objections on a lack of sufficient valid and representative data demonstrating that the lower rates can be achieved. The commenters expressed their belief that the Agency used references to new equipment as opposed to data from actual users to arrive at the proposed permissible leak rates.

In addition, EPA requested comment on the interchangeability of equipment designs that may be more leak-tight than others. That is, the Agency wanted to know if there are compelling reasons why users of industrial process refrigeration must use open-drive compressors or direct expansion

systems rather than hermetic compressors and secondary loops.

EPA received comments stating that the Agency should not require retrofitting or rebuilding of older appliances that use open-drive compressors and/or have long primary refrigerant loops, because the cost associated with rebuilding a refrigeration system to use hermetic compressors or secondary refrigerants is large. Additional comments noted several problems with requiring hermetic compressors for industrial applications. Commenters noted that maintenance takes longer and emissions are more likely, because the whole refrigerant charge has to be cleaned or replaced if the hermetic compressor motor fails. A commenter suggested that if the Agency is considering requiring hermetic (or semi-hermetic) compressors and/or secondary refrigerants, it should do so in a different rulemaking with its own proposal and comment period due to concerns over technical infeasibility (especially for lower temperature and larger manufacturing processes) and associated costs. Commenters stated that hermetic (or semi-hermetic) compressors would not necessarily always provide a large degree of emissions reductions, hence there is less certainty as to the environmental benefit of this proposed requirement.

A commenter stated that a universal requirement to use secondary refrigerants would be inappropriate. The commenter stated that suitable or compatible secondary refrigerants might not be available for a particular process. The commenter believed that switching to secondary refrigerants would be burdensome because most refrigeration systems are designed for specific primary refrigerants. According to the commenter, large portions of the system would have to be replaced at great expense to successfully switch to a secondary refrigerant.

EPA also sought comment on other possible approaches to leak repair in industrial process

refrigeration equipment that could be more or less complex than the one proposed. A simple approach would lower the current permissible leak rate for all industrial process appliances to a single new rate, perhaps to 25 percent per year. A more complex approach would establish three or more permissible rates for different classes of appliances.

One commenter suggested a two-tier approach to lowering the permissible leak rate that would allow industry to select the tier which best accommodates their needs. The first tier would be a simple approach that reduces the permissible leak rate to a new lower rate (say 25-30%) that would apply to all industrial process refrigeration appliances. The second tier would be a more complex approach, namely, to distinguish between appliance types in establishing permissible leak rates.

Another commenter was concerned that the proposed permissible leak rates may be difficult to achieve without replacing the entire appliance or wholesale replacement of joints and seals. Although technically feasible, the commenter thought this would be an unreasonable requirement due to the costs associated with such replacements. The commenter suggested a more lenient acceptable leak rate to account for normal variations in leak rates between various pieces of the appliance. The commenter noted that revised regulations should take into account increasing leak rates in older appliances, higher leak rates in portable and mobile appliances, and refrigerant charging errors that may significantly distort the leak rate calculation. The commenter suggested permissible leak rates of 25 percent for commercial refrigeration, regardless of the age of the appliance, and 10-15 percent for all other appliances.

EPA also sought comment on the proposal to make the new leak rates effective for industrial process refrigeration equipment three years after promulgation for the following reasons:

1. Owners, operators, and servicers of industrial process refrigeration appliances have had less time than owners, operators, and servicers of other types of appliances to learn and implement the existing maximum permissible rates;
2. Custom-built industrial process refrigeration appliances and replacement parts take longer than other types of appliances to order, build, and repair, thus providing a rationale for a time delay between promulgation and effective date;
3. Industrial process refrigeration appliances must be shut down, at considerable expense before large repairs can be made to their refrigeration systems or before such systems can be replaced, thus providing a rationale for permitting significant lead time between the promulgation and effective date of the new leak rate.

EPA received comment supporting the effective date. Commenters stated that the use of 30 days after the publication date of the final rule would be impractical as it does not take into consideration the work load and scheduling of refrigeration contractors nor the cost and impact on the budgetary process of the appliance owner. Other commenters noted that the three-year delay would allow time for technicians to be retrained, and to help mitigate the burden and disruption associated with the change in leak rates.

EPA believes, based on the comments it received, that additional data on historical repair trends and leak tightness of industrial process refrigeration appliances are warranted prior to lowering the leak rates. EPA intends to initiate efforts to gather data on the availability and effectiveness of current leak reduction methods prior to amending the leak repair trigger rates. Therefore, as a part of today's action, EPA is not finalizing the proposal to lower the permissible leak rates for industrial

process refrigeration appliances containing more than 50 pounds of CFC or HCFC refrigerant. Since EPA is not finalizing the proposal to lower leak rates for industrial process refrigeration appliances, there will not be a corresponding three-year implementation date for the effective date of the regulations. Due to the apparent difficulties and incompatibility of hermetic compressors in the industrial process refrigeration sector, further evaluation is required prior to any Agency action considering how to incorporate the use of hermetic compressors or secondary loop systems into the leak repair regulations. The Agency may address, in a future NPRM, alternative approaches to determining the leak rate in industrial process refrigeration.

#### *4. Cross-sector Issues*

EPA requested comment on several issues affecting all three sectors covered by the leak repair requirements. EPA requested comment on its proposal to establish a two-tier leak rate which would distinguish between old and new appliances in establishing maximum allowable leak rates based upon the date of manufacture of the appliances. EPA proposed and sought comment on the use of the year 1992 as the baseline to regulate appliances more or less stringently. EPA also requested comment on whether the environmental and economic benefits of having two leak rates would justify the increase in administrative complexity that would result from such an approach.

In proposing to establish a two-tier leak repair requirement based upon the age of appliances, EPA requested comment on whether the date of “manufacture” should be defined as the date that appliance leaves the factory or the date that it is installed. EPA noted that it may be appropriate to define “manufacture” differently for different types of appliances, because some appliances (e.g., comfort cooling chillers) could be considered “manufactured” when they leave the factory, while

appliances that are assembled in the field from numerous components (e.g., commercial and industrial process refrigeration) could be considered “manufactured” when their installation is complete.

EPA received comments stating that the Agency should not require refrigeration equipment to continue to meet the same very low leak rates throughout the life of the equipment, because leak rates are likely to increase as the refrigeration equipment ages. One commenter noted that experience indicates that older refrigeration systems generally have higher leak rates than new ones; hence, systems do not maintain the same leak rates throughout their life span. Many common types of machinery exhibit a decline in performance as they age. The commenter cautioned that if the Agency obtains historic information on leak-tightness of refrigeration systems, it should not compare pre-rule (63 FR 32044; June 11, 1998) to post-rule data, because improvements in the leak rates of older equipment would result from the regulation going into effect, not from any improvement in that actual equipment. The commenter stated that because it is unlikely that the Agency will have historical leak-tightness data on the equipment, and because post-rule equipment has not yet completed a full life span, the Agency should not impose leak rates that the equipment may not be able to meet as it ages. The commenter stated that the Agency should provide a mechanism that permits equipment to continue to comply as it ages.

EPA concurs with the commenters in that leak rates are likely to increase as the appliances age, and believes that this is in fact the rationale for establishing the leak repair requirements. While EPA proposed a two-tier rate, the NPRM did not propose or imply that the leak rate for older appliances would not be tightened. To the contrary, the NPRM discussed the Agency’s intent to lower leak rates for older appliances while establishing a two-tier system. Older appliances should be maintained to be

as tight as possible. By mandating leak repair trigger rates, EPA ensures that older appliances will be maintained and emissions of refrigerants will be minimized to the lowest achievable level as appliances age.

EPA received mixed comments regarding the Agency's proposal to differentiate leak rates for appliances based upon date of manufacture. Some commenters expressed concern that this approach complicates the regulation because owners and operators would need to rely on a nameplate on the appliance for the date of manufacture or other data that might not be readily available. Other commenters requested that the date of manufacture for custom-built appliances be identified according to the date that the appliance leaves the factory, because the date of shipment and the date that the appliance was actually placed into service may be years apart. While others suggested that the date of manufacture be defined as the date of mechanical completion or start-up date of the system.

EPA also requested comment on whether it is possible to distinguish between slow leakage, servicing emissions, and catastrophic emissions in establishing and complying with leak rate limits. This question becomes important with a lower permissible leak rate because the percentage of charge lost through servicing and catastrophic emissions may be a significant fraction of the lower rate.

EPA received comment that amendments to the leak rate required practices may not be necessary because in many sectors, such as the commercial sector, leaks tend to be catastrophic in nature. One commenter stated that it would not be helpful to exclude catastrophic losses from leak rate calculations, since the immediate repair of such appliances is necessary in order to get the refrigeration system back on-line. The commenter suggested that such an exclusion may actually be detrimental if the Agency then requires some sort of recordkeeping requirement to keep track of which emissions

were from ordinary leaks and which were from catastrophic events. In such instances repairs are not only required but a necessity in order to remain operable; thus, it is in the best interest of the owner to control and reduce leaks. Commenters stated that owners or operators should not be faulted for catastrophic leakage of refrigeration equipment; thus, it is appropriate to establish leak rates based on slow leaks alone.

The primary goal of the leak repair provisions has been to reduce emissions from leaking appliances. EPA recognizes that catastrophic emissions are often beyond the control of appliance owners or operators. EPA believes that catastrophic losses will come to the attention of appliance owners or operators very quickly after they occur and will be large compared to losses from slow emissions. In sectors such as the commercial refrigeration sector, immediate repair of catastrophic leaks is required in order to sustain business operations. EPA believes that a requirement to repair the appliance so that it does not continue to leak above the applicable annual leak rate would not be expected to compromise the need of the owner or operator to repair the catastrophic leak. Since the commercial sector would need to respond to catastrophic releases immediately, EPA believes that adherence to the leak repair requirements simply reinforces the need to repair leaks in a timely manner. The environmental benefit of the requirements is that they persuade owners or operators to take action to address the operation of appliances that have a history of catastrophic failures. Under the proposed and final leak repair regulations such appliances would eventually require retirement, replacement, or retrofit to substitutes that are less damaging to the ozone layer. The intent of the requirements is not to mandate continuous repair attempts on leaking appliances, but to take efforts to maintain appliances such that they will not undergo repeated patterns of repair attempts followed by refrigerant recharge.



EPA emphasizes that the aim of the leak repair regulations is to minimize emissions of ozone-depleting refrigerants to the lowest achievable level by requiring the repair, replacement, or retrofit of leaking appliances. Therefore, while catastrophic losses are not the intended focus of the leak repair requirements, such losses are not exempt from the leak repair requirements.

#### *5. Extension of Leak Repair Requirements to HFC and PFC Appliances*

In the NPRM, EPA explained that establishing consistent leak repair requirements for CFC, HCFC, HFC, and PFC appliances would minimize emissions of all four types of refrigerants and substitutes. EPA further explained that exempting HFC and PFC substitutes from conservation requirements could lead to confusion and skepticism regarding similar requirements for CFCs and HCFCs, which would undermine implementation of the statutory directives to reduce emissions of these substances to the lowest achievable level and to maximize their recapture and recycling. Hence in the NPRM, EPA requested comment on its proposal to extend the leak repair requirements to owners or operators of appliances using HFC and PFC substitutes.

EPA received comments opposing the extension of the leak rate regulations to HFC and PFC refrigerant substitutes. Commenters cited the price of HFCs and the need for efficient operation of refrigeration equipment as incentives for owners or operators to repair leaks as soon as possible, regardless of a maximum permissible leak rate. Comments also questioned the statutory authority of EPA to regulate substances that do not contribute to depletion of the stratospheric ozone layer (i.e., class I and class II ODS). One commenter stated that the proposal was arbitrary, capricious, or otherwise not in accordance with law; therefore, it would be illegal for the Agency to impose leak repair requirements on those systems and refrigerants for which it lacks sufficient data. The commenter also

stated that the requirements cannot apply to leaks that occur during normal use, since these leaks do not occur during the servicing, maintenance, or disposal of appliances.

In the NPRM (63 FR 32045; June 11, 1998) EPA explained that section 608(a) provides EPA with authority to promulgate the proposed requirements. Section 608(a) requires EPA to promulgate regulations regarding use and disposal of class I and II substances that “reduce the use and emission of such substances to the lowest achievable level” and “maximize the recapture and recycling of such substances.” Section 608(a) further provides that “(s)uch regulations may include requirements to use alternative substances (including substances which are not class I or class II substances) \* \* \* or to promote the use of safe alternatives pursuant to section 612 or any combination of the foregoing.” In addition, Section 608(a)(2) requires EPA to promulgate regulations establishing standards and requirements regarding use and disposal of class I and class II substances during service, repair, or disposal of appliances.

While market price may be an incentive against venting, it has not been found to be a sufficient deterrent against the continuous practice of repair attempts followed by refrigerant recharges. EPA inspections continue to find excessive leak rates from IPR appliances. EPA believes that the statutory authority to promulgate regulations regarding use of class I and II substances, including requirements to use alternatives, is sufficiently broad to include requirements on how to use alternatives, where regulation is needed to reduce emissions and maximize recycling of class I and II substances.

Therefore, in accordance with the requirements of section 608(c) of the Act, EPA is extending the leak repair required practices and the associated reporting and recordkeeping requirements to owners or operators of appliances using HFC blends that consist in part of an ODS. Therefore owners

or operators of appliances using HFC refrigerant blends including but not limited to R-401A and B, R-402A and B, R-403B, R-406A, R-408A, R-409A, R-411A, and B, R-414A and B, R-416A, R-500, R-502, R-503, NARM-502, RB-276 (FreeZone), GHG-HP, GHG-X5, Freeze 12, ICOR, THR-04, and R-509 are covered under the leak repair required practices because the refrigerants consist in part of a class II ODS. This extension has been accomplished by amending the definition of *refrigerant* at §82.152 in a previous rulemaking (March 12, 2004; 69 FR 11946). The change in the definition means that substitutes consisting in whole or in part of an ODS are covered under the required practices of 40 CFR part 82 subpart F (i.e., section 608).

EPA has decided not to extend the leak repair requirements or the associated reporting and recordkeeping requirements to owners or operators of appliances using pure HFC or PFC substitutes. However, EPA emphasizes that HFC and PFC substitutes are not exempt from the statutory venting prohibition of section 608(c)(2) of the Act (69 FR 11946; March 12, 2004). Therefore, in the absence of any required leak repair requirements, it statutorily remains illegal to knowingly vent HFC and PFC substitutes during the maintenance, service, repair, and disposal of comfort cooling, commercial refrigeration, and industrial process refrigeration appliances.

#### *6. Clarification of Leak Repair Requirements*

In the May 14, 1993 final rule (58 FR 28660), EPA published final regulations requiring owners and operators to “have all leaks repaired” where an appliance subject to the leak repair requirements was leaking above the applicable allowable annual leak rate (58 FR 28716). In a subsequent rulemaking regarding leak repair requirements published on August 8, 1995 (60 FR 40420), EPA amended that language to state that “repairs must bring the annual leak rate to below 35

percent of the total charge during a 12-month period” (60 FR 40440), or where appropriate, to below 15 percent. This change in the rule recognized that appliances without hermetically sealed refrigerant circuits should not be expected to have a “zero percent” leak rate.

EPA believes that it is practical to require the owners or operators to maintain a leak rate that is at or below the applicable allowable annual rate, and where the leak rate has been exceeded to make the necessary repairs to return the appliance’s leak rate to or below the applicable allowable leak rate or to retrofit/retire the appliance. EPA emphasizes that compliance with the required practices for leak repair is dependent upon the leak rate of the appliance not the repair of a specific leak or leaks.

In response to commenters’ concerns regarding verification testing, EPA is clarifying that at this time verification testing is only required for: owners or operators of industrial process refrigeration appliances, in accordance with §82.156(i)(3); owners or operators of federally-owned comfort cooling appliances who are granted additional time for repairs under §82.156(i)(5)(iii); and owners or operators of federally-owned commercial refrigeration appliances who are granted additional time for repairs under §82.156(i)(1)(iii). While verification tests are not required for all sectors, such testing performed as a part of leak repair efforts has advantages for owners and operators. EPA believes that attempts to verify repairs at the point of repair and again after the appliance is operational will aid the owner or operator in demonstrating compliance with the leak repair regulations. In contrast, multiple repair attempts of the same leaks followed by refrigerant recharge demonstrate that the repair of the appliance did not bring the annual leak rate to below the applicable leak rate as required by §82.156(i).

EPA requires owners and operators of industrial process refrigeration appliances and in some instances for federally-owned commercial refrigeration appliances and federally-owned comfort cooling

appliances that are granted additional time to make repairs, to perform initial and followup verification tests to establish that repairs were successful. EPA recognizes that verification tests indicate the success or failure of the repair effort for a given leak or set of leaks, not the leak rate of an appliance. In the August 8, 1995 rulemaking, EPA stated that it was not the Agency's "intention to imply that the verification tests show what the leak rate is. However, EPA believes that where the verification tests show that the repairs have been successful, in most cases this will mean that there has been a reduction in the leak rate" (60 FR 40430).

Section 82.156(i) requires owners or operators to conduct repairs to lower an appliance's leak rate below the applicable allowable annual leak rate. EPA emphasizes that knowing a leak has been repaired does not necessarily mean that the owner or operator is aware of the current leak rate of the appliance or whether the owner or operator is in compliance with the required practices of §82.156. Such is the case in instances where owners or operators make repair attempts but do not calculate the leak rate. Without calculating the leak rate the owner or operator would have no means of determining compliance with the leak repair required practices.

In the NPRM, EPA described four compliance scenarios to assist the owners or operators in determining what actions are appropriate when an appliance is leaking above the applicable allowable annual leak rate. Due to the volume of questions that those scenarios generated, EPA feels that further discussion of the leak repair compliance scenarios is warranted. The compliance scenarios described in the NPRM are consistent with the regulatory requirements, and the Agency did not propose any regulatory changes associated with these scenarios. EPA discussed the scenarios in the NPRM to provide compliance assistance. EPA solicited feedback on these scenarios and the outcomes

described in each scenario in order to evaluate the need for further clarification and possible regulatory amendments. The following discussion of five scenarios (the previous four scenarios from the NPRM (63 FR 32070; June 11, 1998) and one more scenario added for further clarity) aims to provide further clarification to the regulated community on how the leak rate and verification tests relate to the repair and/or retrofit/retire provisions promulgated at §82.156(i). EPA has edited the scenarios to remove any ambiguity as to their applicability to industrial process refrigeration, comfort cooling, or commercial refrigeration appliances.

*a. Scenario 1*

In Scenario 1, the owner or operator of industrial process refrigeration appliances or federally-owned comfort-cooling or commercial appliances discovers that the appliance is leaking above the applicable allowable annual leak rate. The owner or operator fixes all leaks, and verifies that the leaks have been repaired consistent with the verification testing requirements of §82.156(i), meaning an initial verification test was conducted at the conclusion of the repair efforts and a follow-up verification test was conducted within 30 days after the initial verification test. If a leak rate above the applicable allowable annual leak rate for the appliance is suspected after the repairs are completed and leaks are discovered at new locations, these leaks will be considered as a new leak occurrence for the appliance.

Leaks in the appliance that occur after repair attempts (whether or not they occur at the same location), but in the absence of mandatory initial and follow-up verification tests are considered violations for several reasons. First, the verification tests were not conducted in accordance with §82.156. It is more likely that failure to verify that repairs were successful will lead to future leaks

within the appliance. EPA considers refrigeration additions that occur after repair attempts, but in the absence of successful mandatory verification tests, to be continuing violations. This is because without verification, there is no evidence that the owner or operator brought the leak rate of the appliance beneath the applicable leak rate, even though repair attempts might have been made.

However, if mandatory verification tests show that repairs were successful and the appliance is once again suspected of having a leak at a new location that results in the appliance leaking above the applicable allowable leak rate (even if the leak occurs a short time after the repairs were completed), EPA considers these leaks as a new leak occurrence for the appliance. The next leak occurrence requiring addition of refrigerant would constitute a new leak occurrence for the appliance, and the owner or operator would be required to comply with all applicable requirements promulgated at §82.156(i).

Scenario 1 as described in the NPRM was not applicable to owners or operators of comfort cooling or commercial refrigeration appliances that are not federally-owned or operated. These appliance owners or operators are encouraged but not currently mandated to perform initial and follow-up verification tests in order to ensure that the leak rate has been brought below the applicable leak rate. Owners or operators of comfort cooling or commercial refrigeration appliances that are not federally-owned or operated are required to repair leaks such that the leak rate of the appliance will not exceed the applicable leak rate within 30 days of discovery. Owners or operators are relieved of this obligation if they choose to develop, within 30 days of discovery of a leak, a one-year retrofit or retirement plan in accordance with §§82.156(i)(1) and (i)(5), for commercial and comfort cooling appliances, respectively.

*b. Scenario 2*

Scenario 2 as described in the NPRM was not applicable to owners or operators of comfort cooling or commercial refrigeration appliances that are not federally-owned or operated, because such owners or operators are not required to perform initial and follow-up verification tests. In response to public comments requesting clarity on the scenario, EPA has clarified Scenario 2 such that it is specific to repeated leaks at the same location (same location meaning an identical point within the same appliance).

Under Scenario 2, the owner or operator of the industrial process refrigeration or under certain circumstances the owner or operator of federally owned comfort cooling or commercial appliance with a refrigerant charge greater than 50 pounds discovers that the appliance is leaking above the applicable allowable annual leak rate. The owner or operator fixes the leaks and verifies that they have been repaired consistent with §82.156(i). The next time leaks are suspected within a consecutive 12-month period, the owner or operator finds leaks have occurred at the same location (meaning the identical point within the same appliance). This ongoing problem is an indication that appropriate repairs have not been conducted. Where leaks at the same location continue to occur, the owner or operator has not performed repair efforts necessary to reduce the leak rate below the applicable allowable annual leak rate. Thus, the owner or operator has violated the required practices established in §82.156(i).

*c. Scenario 3*

In the third scenario, the owner or operator discovers that the appliance is leaking above the applicable allowable annual rate and identifies ten different leak sources that are contributing to the high leak rate. The owner or operator determines that repairing six leaks will bring the appliance into



compliance by lowering the leak rate to below the applicable allowable annual rate. The owner or operator believes that leaving four leaks unrepaired still will result in a leak rate below the applicable allowable annual rate. The owner or operator fixes and as required for industrial process refrigeration and federally-owned comfort cooling and commercial appliances verifies that these six leaks have been repaired consistent with the requirements promulgated at §82.156(i). The appliance continues to leak, but below the applicable allowable annual rate.

In the NPRM, EPA stated that in this scenario the owner or operator of the appliance complied with the requirements by actually reducing and maintaining a leak rate that is below the applicable allowable annual rate. Such is the case for instances where owners or operators are mandated to perform initial and follow-up verification tests, in accordance with §82.156(i). EPA is concerned that this scenario as proposed may not provide compliance for owners or operators who are not currently mandated to perform initial and followup verification tests, namely owners or operators of commercial and comfort cooling appliances.

In order to remain consistent with the regulatory language requiring owners or operators to make repairs that bring the annual leak rate to below the applicable leak rate, EPA is clarifying that it cannot condone actions by owners or operators to knowingly allow appliances to leak. EPA believes that failure to repair all known leaks, and successfully verify repairs when required, leaves the owner or operator with a great deal of uncertainty concerning their compliance with the leak repair required practices. In the absence of verification, the owner or operator of comfort cooling and commercial appliances would have no way of knowing if their appliance is not in compliance until a future need to add refrigerant. If the owner or operator decided to leave known leaks unchecked, a future addition of

refrigerant could lead to a continuing violation for failure to sufficiently repair the appliance such that it does not leak above the applicable leak rate within 30 days of discovery.

*d. Scenario 4*

In the fourth scenario, the owner or operator discovers that the appliance is leaking above the applicable allowable annual rate. The owner or operator identifies ten different leak sources that are contributing to the leak rate. The owner or operator decides that repairing six leaks will bring the appliance into compliance by lowering the leak rate to below the applicable allowable annual rate. The owner or operator fixes and verifies that these leaks have been repaired consistent with the requirements promulgated at §82.156(i).

Upon later inspection, or by the future need to add refrigerant, it is discovered that the appliance continued leaking above the applicable allowable annual rate and there are no newly identified leak sources. In this scenario, the owner or operator of comfort cooling or commercial refrigeration appliances did not lower the leak rate in accordance with §82.156(i).

As previously stated in the discussion of Scenario 3, EPA cannot condone actions by owners or operators to knowingly allow appliances to leak, and believes that such actions result in uncertainty concerning compliance with the leak repair required practices. EPA considers this failed repair attempt a violation of the leak repair required practices because the owner or operator did not sufficiently repair the appliance. Meaning that even after repair attempts, the appliance continued to leak above the applicable annual leak rate. In the absence of verification and the subsequent addition of refrigerant without the identification of new leaks, the owner or operator of the comfort cooling or commercial appliance is not considered to have used “sound professional judgement” in determining which leaks to

repair. Owners or operators of appliances that pass mandatory initial and followup verification tests under §82.156(i) (i.e., industrial process refrigeration and federally-owned comfort and commercial refrigeration appliances) are not considered to be in violation of the leak repair required practices, as they have successfully passed initial and followup verification tests.

*e. Scenario 5*

EPA received comments questioning the applicability of the compliance scenarios to comfort cooling and commercial refrigerant appliances. Several commenters expressed concern that current EPA interpretation of the leak repair requirements could result in enforcement actions when the owner has made good faith attempts to repair all known leaks.

The commenters described a scenario in which repairs were made on all known leaks in a commercial or comfort cooling appliance. After this initial repair, the owner or operator discovers a new leak(s), in a different location(s) that bring the leak rate of the appliance above the applicable leak rate, as shown by the addition of refrigerant and calculation of the leak rate. This second round of leaks is once again repaired and the appliance is once again recharged with refrigerant. The commenters questioned why the second repair and second addition of refrigerant were viewed by EPA as continuing violations of the leak repair provisions. Or more simply stated, commenters questioned why the second addition of refrigerant that results in an annual leak rate above the applicable leak rate is viewed by EPA as a continuing violation from the first addition of refrigerant and subsequent repair. The commenters also noted that using this interpretation of the regulations would make it impossible for the owner or operator to know that their appliances were in compliance until the next leak occurrence or need for additional refrigerant. This assumes that the appliance would have a new leak or require the

addition of refrigerant. If it did not after the initial repair, it may not be possible to know if the appliance was brought beneath the applicable trigger rate at all.

In response to public comments, EPA is emphasizing that the appliance owner or operator must demonstrate that the repair(s) brought the leak rate of the appliance below the applicable annual leak rate, in accordance with §82.156. Consecutive or continued cycles of repair and subsequent refrigerant charges are not viewed by EPA as compliance with the required practices. However, in the absence of mandatory initial and followup verification, the owner or operator of comfort cooling and commercial refrigeration appliances may not realize that a repaired appliance has remained out of compliance until the future need to add refrigerant. Therefore, until verification tests are mandated, EPA considers leak occurrences in commercial and comfort cooling appliances that have occurred after the appliance was repaired in compliance with §82.156(i)(1) and (i)(5) as “new” if they involve different leak(s) than the previously repaired leak event.

Conversely, in instances where leaks continue to occur at the same location in a commercial refrigeration or comfort cooling appliance (meaning that the owner or operator continues to recharge after continued repair attempts on the same leak(s)), are viewed as violations of the leak repair provisions. EPA views patterns of futile repair attempts to repair leaks that continue to occur at the same location followed by refrigerant recharge as violations of the leak repair requirement to bring the leak rate of the appliance beneath the applicable leak rate within 30 days of discovery. Such actions are not viewed as attempts to comply with the leak repair requirements since they result in an increase in refrigerant release to the atmosphere.

#### **D. Recordkeeping for Leak Repair**

Prior to the NPRM (June 11, 1998; 63 FR 32043), EPA received comments indicating that the recordkeeping and reporting requirements promulgated at §82.166(n) may be confusing for those subject to the requirements. The structure of these provisions changed between the proposed and final rules (60 FR 3992; January 19, 1995 and 60 FR 40420; August 8, 1995). The August 8, 1995 final rule required the same reporting and recordkeeping requirement that EPA proposed in the January 19, 1995 NPRM, except for the changes discussed in the preamble to the August 8, 1995 final rule.

In the 1998 NPRM, EPA proposed to modify the structure and presentation of the requirements to provide clarity by indicating which records must be maintained and reported. EPA also proposed to extend the leak repair reporting and recordkeeping provisions to HFC and PFC appliances by incorporating them into the definition of “refrigerant” (63 FR 32058).

#### *1. Applicability to Substitutes*

In the NPRM, EPA proposed to extend the leak repair recordkeeping and reporting requirements for CFC and HCFC appliance owners or operators to owners or operators of HFC and PFC appliances. The NPRM proposed to extend these requirements by amending the definition of “refrigerant” to include HFC and PFC substitutes. The NPRM proposed that owners or operators of appliances that contain 50 or more pounds of refrigerant and leak above the applicable leak rate must adhere to the reporting and recordkeeping records in accordance with §82.166(k), (n), (o), (p) and (q).

At this time, EPA is not finalizing the proposal to subject owners or operators of all HFC and PFC appliances to the recordkeeping and reporting requirements of §82.166. However, today’s action extends the recordkeeping and reporting requirements to owners or operators of appliances that

use substitutes consisting of an ODS. EPA has not otherwise amended the recordkeeping and reporting requirements. These requirements are summarized below:

*a. General Service and Repair Recordkeeping and Reporting*

In accordance with §82.166(k), owners or operators of appliances normally containing 50 or more pounds of a refrigerant containing a class I or class II ODS and leak above the applicable leak rate are subject to the following recordkeeping and reporting requirements.

- 1) Keep service records documenting the date and type of service, as well as the quantity of refrigerant added.
- 2) Keep records of refrigerant purchased and dates of refrigerant addition in instances where owners or operators service or repair their own appliances added to such appliances in cases where owners or operators add their own refrigerant.

*b. Extension of 30-day Repair Requirement*

In accordance with §82.156(i)(1)(i), if owners or operators of the federally-owned commercial refrigeration appliances determine that leaks cannot be repaired within 30 days and therefore seek an extension, they must document all repair efforts and notify EPA of their inability to comply within the 30-day repair requirement. The notification must state the reason for the inability to comply within the 30-day repair requirement. If EPA determines that the extension is not justified, EPA will notify the owner or operator within 30 days of receipt of the notification.

In accordance with §82.156(i)(2) and §82.156(i)(5)(i), owners or operators of industrial process refrigeration appliances and federally-owned comfort cooling and commercial refrigeration appliances who determine that the leak rate of the appliance cannot be brought to below 35 percent

during a 12-month period within 30 days (or 120 days, where an industrial process shutdown is required) of discovering the leak and are granted an extension, must document all repair efforts. They must also notify EPA of the reason for the inability to repair within 30 days of making such a determination.

*c. Notification Due to Failed Verification Test*

In accordance with §82.156(i)(3)(iii), the owner or operator of an industrial process refrigeration appliance that fails a follow-up verification test must notify EPA within 30 days of the failed follow-up verification test. The notification must include the dates and types of all initial and follow-up verification tests performed and the test results for all initial and follow-up verification tests within 30 days after conducting each test.

*d. Relief From the Obligation to Retrofit or Replace an Appliance*

In accordance with §82.156(i)(3)(iv), the owner or operator of industrial process refrigeration appliances and federally owned comfort cooling and commercial appliances who are granted additional time to repair are relieved of the obligation to retrofit or replace the industrial process refrigeration appliance if second repair efforts to fix the same leaks that were the subject of the first repair efforts are successfully completed within 30 days (or 120 days where an industrial process shutdown is required) after the initial failed follow-up verification test. The owner or operator is required to notify EPA within 30 days of the successful follow-up verification test and is no longer subject to the obligation to retrofit or replace the appliance.

In accordance with §82.156(i)(3)(v), the owner or operator of industrial process refrigeration appliances must notify EPA within 30 days if the owner or operator determines that they are relieved of

the obligation to retrofit or replace appliances because within 180 days of the initial failed follow-up verification test they established that the appliance's annual leak rate did not exceed the applicable leak rate (in accordance with §82.156(i)(4)). The notification must include a plan to fix other outstanding leaks for which repairs are planned but not yet completed to achieve a rate below the applicable allowable leak rate. The notification must also include the identification of the facility and date the original information regarding additional time beyond the initial 30 days was filed. The owner or operator would no longer be subject to the obligation to retrofit or replace the appliances that arose as a consequence of the initial failure to verify that the leak repair efforts were successful.

The notification must be relevant to the affected appliance and must include: identification of the facility; the leak rate; the method used to determine the leak rate and full charge; the date a leak rate of greater than the allowable annual leak rate was discovered; the location of leaks(s) to the extent determined to date; and any repair work that has been completed thus far including the date that work was completed. The information must also include written reasons why more than 30 days are needed to complete the work and an estimate of when repair work will be completed. If changes from the original estimate of when work will be completed result in moving the completion date forward from the date submitted to EPA, the reasons for these changes must be documented and submitted to EPA within 30 days of discovering the need for such a change.

*e. Relief From 30-day Repair Requirement Due to Adoption of Retrofit/Retirement Plan*

In accordance with §82.156(i)(6), owners or operators of industrial process refrigeration and federally owned comfort cooling and commercial appliances are not required to repair, if within 30 days of discovering the exceedance of the applicable leak rate or within 30 days of a failed follow-up



verification test in accordance with §82.156(i)(3)(ii), they develop a one-year retrofit or retirement plan for the leaking appliance. The retirement or retrofit plan must be kept at the site of the appliance and made available for EPA inspection upon request. The plan must be dated and all work under the plan must be completed within one year of the plan's date.

Similarly, in accordance with §82.156(i)(6)(i), if the owner or operator of industrial process refrigeration and federally owned comfort cooling and commercial appliances has attempted repair but later decides to proceed with a plan to retrofit or retire the appliance, they must develop a retrofit or retirement plan within 30 days of the determination to retrofit or retire the appliance and complete the plan within one year from discovery that the leak rate exceeded the applicable allowable leak rate.

In all cases, the written plan shall be prepared no later than 30 days after the owner or operator has determined to proceed with retrofitting or retiring the appliance. In addition, the following information must be maintained and is due to EPA Headquarters at the time specified in the paragraph imposing the specific reporting requirement, or no later than 30 days after the decision to retrofit or retire the appliance, whichever is later:

- (1) The identification of the industrial process facility;
- (2) The leak rate;
- (3) The method used to determine the leak rate and full charge;
- (4) The date a leak rate of 35 percent or greater was discovered;
- (5) The location of leaks(s) to the extent determined to date;
- (6) Any repair work that has been completed thus far and the date that the work was completed;
- (7) A plan to complete the retrofit or replacement of the appliance;

- (8) The reasons why more than one year is necessary to retrofit to replace the appliance;
- (9) The date of notification to EPA; and
- (10) An estimate of when retrofit or replacement work will be completed.

If the estimated date of completion changes from the original estimate and results in moving the date of completion forward, documentation of the reason for these changes must be submitted within 30 days of making the determination that an extension is required along with the date of notification to EPA regarding this change and the estimate of when the work will be completed.

*f. Additional Time for Retirement or Retrofit*

In accordance with §82.156(i)(7), the owners or operators of industrial process refrigeration appliances will be allowed additional time to complete the retrofit or retirement of industrial process refrigeration appliances if due to delays occasioned by the requirements of other applicable federal, state, or local laws or regulations, or due to the unavailability of a suitable replacement refrigerant with a lower ozone depletion potential. Under these circumstances, the owner or operator of the appliance must notify EPA within six months after the 30-day period following the discovery of an exceedance of the 35 percent leak rate. Records necessary to allow EPA to determine that these provisions apply and the length of time necessary to complete the work must be submitted to EPA in accordance with §82.166(o), as well as maintained on-site. EPA will notify the owner or operator of its determination within 60 days of receipt the submittal.

An additional one-year period beyond the initial one-year retrofit period is allowed for industrial process refrigeration appliances where the following criteria are met:

- (A) The new or the retrofitted industrial process refrigerant appliance is custom-built;

- (B) The supplier of the appliance or one or more of its critical components has quoted a delivery time of more than 30 weeks from when the order is placed;
- (C) The owner or operator notifies EPA within six months of the expiration of the 30-day period following the discovery of an exceedance of the 35 percent leak rate to identify the owner or operator, describe the appliance involved, explain why more than one year is needed, and demonstrate that the first two criteria are met in accordance with §82.166(o); and
- (D) The owner or operator maintains records that are adequate to allow a determination that the criteria are met.

The owners or operators of industrial process refrigeration appliances may request additional time to complete retrofitting or retiring the appliance beyond the additional one-year period if needed and where the initial additional one year was granted. The request shall be submitted to EPA before the end of the ninth month of the first additional year and shall include revisions of information required under §82.166(o). Unless EPA objects to this request submitted in accordance with §82.166(o) within 30 days of receipt, it shall be deemed approved.

In accordance with §82.156(i)(8), owners or operators of federally-owned commercial or comfort-cooling appliances will be allowed an additional year to complete the retrofit or retirement of the appliances if the conditions described in paragraph §82.156(i)(8)(i) of this section are met, and will be allowed one year beyond the additional year if the conditions in paragraph §82.156(i)(8)(ii) are met.

In accordance with §82.156(i)(8)(i), up to one additional one-year period beyond the initial one-year retrofit period is allowed for such appliances where the following criteria are met:

- (A) Due to complications presented by the federal agency appropriations and/or procurement

process, a delivery time of more than 30 weeks from the beginning of the official procurement process is quoted, or where the appliance is located in an area subject to radiological contamination and creating a safe working environment will require more than 30 weeks;

- (B) The operator notifies EPA within six months of the expiration of the 30-day period following the discovery of an exceedance of the applicable allowable annual leak rate to identify the operator, describe the appliance involved, explain why more than one year is needed, and demonstrate that the first criterion is met in accordance with §82.166(o); and
- (C) The operator maintains records adequate to allow a determination that the criteria are met.

In accordance with §82.156(i)(8)(ii), the owners or operators of federally-owned commercial or comfort-cooling appliances may request additional time to complete retrofitting, replacement or retiring such appliances beyond the additional one-year period if needed and where the initial additional one year was granted in accordance with paragraph §82.156(i)(8)(i). The request shall be submitted to EPA before the end of the ninth month of the first additional year and shall include revisions of information earlier submitted as required under §82.166(o). Unless EPA objects to this request submitted in accordance with §82.166(o) within 30 days of receipt, it shall be deemed approved.

*g. Omission of Purged Refrigerant From Leak Rate Calculations*

In calculating annual leak rates, purged refrigerant that is destroyed at a verifiable destruction efficiency of 98 percent or greater will not be counted toward the leak rate. Owners or operators who wish to exclude purged refrigerants that are destroyed from annual leak rate calculations must maintain records on-site to support the amount of refrigerant claimed as sent for destruction. Records shall be based on a monitoring strategy that provides reliable data to demonstrate that the amount of refrigerant

claimed to have been destroyed is not greater than the amount of refrigerant actually purged and destroyed and that the 98 percent or greater destruction efficiency is met. Records shall include flow rate, quantity or concentration of the refrigerant in the vent stream, and periods of purge flow.

In addition, the owners or operators who wish to exclude purged refrigerants that are destroyed from annual leak rate calculations must maintain on-site and submit to EPA, within 60 days after the first time such exclusion is used by that facility, the following information:

- (i) The identification of the facility and a contact person, including the address and telephone number;
- (ii) A general description of the refrigerant appliance, focusing on aspects of the appliance relevant to the purging of refrigerant and its subsequent destruction;
- (iii) A description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept by the owners or operators where the appliance is located;
- (iv) The frequency of monitoring and data-recording; and
- (v) A description of the control device, and its destruction efficiency.

*h. Determination of Full Charge*

EPA has previously defined *full charge* as the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one of the following four methods or a combination of one of the following four methods: (1) The appliance manufacturers' determination of the correct full charge for the appliance; (2) Determining the full charge by appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant

considerations; (3) The use of actual measurements of the amount of refrigerant added or evacuated from the appliance; and/or (4) The use of an established range based on the best available data, regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge, and where records are maintained in accordance with §82.166(q).

Owners or operators choosing to determine the full charge as defined in §82.152 of an affected appliance by using an established range or using that methodology in combination with other methods for determining the full charge defined in the following information: (1) The identification of the owner or operator of the appliance; (2) The location of the appliance; (3) The original range for the full charge of the appliance, its midpoint, and how the range was determined; (4) Any and all revisions of the full charge range and how they were determined; and (5) The dates such revisions occurred. These records are required to be maintained on-site at the facility in which the appliance is located for a minimum of three years.

## *2. Retrofit/Retire Using Lower Ozone-Depleting Potential (ODP) Refrigerants*

In the NPRM, EPA proposed to amend §82.156(i)(6) to incorporate a requirement that was discussed in the preamble to the May 14, 1993 final rule but that was inadvertently excluded from the regulatory text. In the preamble to the final rule, EPA indicated that if the owners or operators elect to retrofit or retire an appliance rather than repair leaks that are above the applicable allowable leak rate, the owners or operators must use a substitute with a lower ODP than the original refrigerant (58 FR 28680; May 14, 1993).

EPA received comments stating that the replacement of leaking appliances with more efficient

appliances should yield significant environmental benefits, and the Agency should not require further environmental benefits by limiting the types of refrigerant that may be used (i.e., requiring retrofit or replacement with a lower ODP refrigerant). Commenters also requested that the Agency address what the owner or operator should do when the only available substitute does not have a lower ODP and consider exempting systems using refrigerants with an ODP of zero.

EPA supports the use of higher efficiency appliances whenever possible. The Agency also believes that a requirement for owners or operators to retrofit or replace leaking appliances with a refrigerant with a lower ODP is important to minimize the use of refrigerants that are potentially more harmful to the stratospheric ozone layer. It would be environmentally unsound to exempt owners or operators from repairing leaks on the grounds that they will retrofit or replace the leaky appliance if the replacement refrigerant would pose an equivalent or even a greater threat to the stratospheric ozone layer. EPA also believes that in many instances older appliances that were designed to use ozone-depleting refrigerants (especially CFCs) are less efficient than newer HCFC and HFC appliances that are currently available. Therefore, EPA has modified the regulatory text to ensure that only a substitute with a lower or equivalent ODP is used.

EPA has amended §82.156(i)(6) to incorporate the requirement to retrofit with a lower ODP refrigerant, as originally discussed in the preamble to the May 14, 1993 final rule (58 FR 28680). In accordance with the amended §82.156(i)(6), owners or operators who elect to retire or retrofit an appliance rather than repair leaks that are above the applicable allowable leak rate, must use a refrigerant or substitute with a lower ODP than the original refrigerant. Owners and operators still retain the option to either retrofit/retire the appliance or repair the existing leaks in accordance with the

existing requirements at §82.156(i)(6) for industrial process refrigeration and §§82.156(i)(1)(i), (i)(5)(i), (i)(6), and (i)(9) for commercial refrigeration and comfort cooling appliances.

### *3. Minor Clarifications*

EPA proposed to modify the text throughout §82.156(i) and §82.166(n) and (o) to substitute the word “retire” for the word “replace” and to add “operators” where the regulation inadvertently refers solely to owners in order to better describe the activities that are discussed and to clarify that the requirements are applicable to both owners and operators(63 FR 32071; June 11, 1998). EPA also proposed to modify §82.156(i)(3) which requires owners and operators to exercise sound professional judgement and to perform verification tests, to clarify that it applies to all owners and operators of industrial process refrigeration appliances and not just to those who are granted additional time to complete repairs. At the same time, EPA proposed to clarify that the paragraph applies to owners and operators of federally-owned commercial refrigeration appliances and of federally-owned comfort cooling appliances who are granted additional time to repair under paragraphs (i)(1) and (i)(5). EPA requested comment on these proposed changes regarding whether the changes would improve the clarity and readability of the regulatory text. EPA received general comments stating uncertainly with interpretation of the leak repair required practices at §82.156 for leak repair; however, the Agency did not receive any negative or controversial comments specific to the request for comments concerning the proposed minor clarifications.

As proposed, EPA has modified the text throughout §82.156(i) and §82.166(n) and (o)(4) to substitute the word “retire” for the word “replace” and to add “operators” where the regulation inadvertently refers solely to owners. EPA deems these changes as necessary, because as explained in



the NPRM the term “retire” better describes the activities that are discussed and the requirements are applicable to both appliance owners and operators.

As proposed, EPA has modified paragraph §82.156(i)(3) which requires owners and operators to exercise sound professional judgement, to clarify that “sound professional judgment” applies to all owners and operators of industrial process refrigeration appliances, federally-owned commercial refrigeration appliances, and federally-owned comfort cooling appliances and not just to those who are granted additional time under paragraphs (i)(1)(i), (i)(2)(i), and (i)(5).

EPA has made minor clarifying changes to the regulatory text at §82.156(i)(3)(i) and (ii) by specifically stating that the requirements apply to owners and or operators of federally-owned comfort cooling and commercial appliances. EPA has also specifically stated, in §82.156(i)(3)(i), that the exemption from the verification requirement is applicable in instances when the owners or operators will retrofit or retire the industrial process refrigeration equipment, federally-owned commercial refrigeration appliance, or federally-owned comfort cooling appliance (formerly included only by reference to paragraph (i)(6)).

In addition, EPA has amended §82.156(i)(3)(ii) and (i)(6)(i) to provide owners and operators of industrial process refrigeration appliances, federally-owned commercial refrigeration appliances, or federally-owned comfort cooling appliances who have been unsuccessful in their repair attempts, and therefore are switching to a retrofit/retirement mode, 30 days from leak discovery to prepare and one year to execute a retrofit/retirement plan. EPA recognizes the need to provide the owners or operators with sufficient time to develop and implement retrofit or retirement plans; therefore, the reference to the date of the failure to verify that repairs have been successfully completed has been eliminated. By

deleting this reference, owners or operators have 30 days from the verification test failure to develop a retrofit/retirement plan, and one year from the plan's date to complete the retrofit or retirement (or such longer time periods as may apply under §82.156(i)(7) and (i)(8)). In addition, EPA has added the term “comfort cooling” to §82.156(i)(5) to remove any ambiguity as to the type of appliance that is applicable to this subparagraph.

EPA has also made minor changes to the reporting and recordkeeping requirements throughout §82.166(n) and (q). EPA has clarified that the reporting requirements of paragraphs (n), (n)(1), (n)(2), and (n)(3) are only required when specified under §82.156. EPA has restated the required contents of retrofit or retirement plans throughout §82.166(n). EPA has also clarified §82.166(q) by stating that owners or operators who choose to determine the “full charge,” as defined at §82.152, of an appliance by using an established range or using that methodology in combination with other methods for determining the full charge must maintain the specified information identifying the appliance and the methodology used to determine the “full charge.”

#### **IV. STATUTORY AND EXECUTIVE ORDER REVIEWS**

##### **A. Executive Order 12866: Regulatory Planning and Review**

Under Executive Order 12866, [58 Federal Register 51,735 (October 4, 1993)] the Agency must determine whether the regulatory action is “significant” and therefore subject to OMB review and the requirements of the Executive Order. The Order defines “significant regulatory action” as one that is likely to result in a rule that may:

(1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way

the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a “significant regulatory action” under the terms of Executive Order 12866 and is therefore not subject to Executive Order 12866 review.

## **B. Paperwork Reduction Act**

The Office of Management and Budget (OMB) has previously approved the information collection requirements contained in the existing regulations at 40 CFR 82 part 82, subpart F under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. and has assigned OMB Control Number 2060-0256, EPA ICR number 1626.07. A copy of the OMB approved Information Collection Request (ICR) may be obtained from Susan Auby, Collection Strategies Division; U.S. Environmental Protection Agency (2822T); 1200 Pennsylvania Ave., NW, Washington, DC 20460 or by calling (202) 566-1672. This action does not impose any new information collection burden beyond the already-approved ICR. This final rule amends the leak repair reporting and recordkeeping requirements of §82.166, without imposing additional requirements

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

### **C. Regulatory Flexibility Act**

EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule. For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administrations' regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

EPA is finalizing this rule to clarify how the leak repair requirements that implement the venting

prohibition of Clean Air Act, Section 608(c)(2) apply to substitutes for class I and class II ODS used in the refrigerant and air-conditioning appliances. The need for and the goal of this action is to reduce emissions of class I and class II ODS and their substitutes to the lowest achievable level consistent with Section 608 of the Clean Air Act. Public comments submitted in response to the June 11, 1998 NPRM (63 FR 32043) raised concerns over the regulation of substitutes that do not contribute to the depletion of stratospheric ozone, and the extension of the leak repair requirements to appliances using such substitutes. Commenters also requested clarification of compliance scenarios that were presented in the NPRM.

As discussed in detail above, EPA is not finalizing the proposed changes to lower the leak rate and extend the requirements to appliances using substitutes that do not contain an ODS. EPA has also made editorial changes to clarify the compliance scenarios without changing their applicability, in order to remain consistent with the leak repair required practices. Therefore, the remainder of this rule results in a clarification of the existing leak repair requirements as they apply to substitutes that consist of an ODS.

EPA performed a detailed screening analysis in 1992 of the impact of the recycling regulation for ozone-depleting refrigerants on small entities that may be impacted by this rulemaking such as owners or operators of commercial refrigeration appliances (such as, small independent grocers and warehouses), comfort cooling appliances (such as small residential and office buildings), and industrial process refrigeration appliances. The methodology of this analysis is discussed at length in the May 14, 1993 regulation (58 FR 28710). That analysis showed that recovery of refrigerants during repair is cost-effective due in part to the increased cost of ozone-depleting refrigerants.

EPA has updated that analysis to examine the impact of the recycling regulation for substitutes for all aspects of the June 11, 1998 NPRM (63 FR 32044). EPA is finalizing the NPRM in three separate actions (i.e., venting prohibition and substitutes sales restriction (69 FR 11946; March 12, 2004), certification of refrigerant recovery and recycling equipment, and leak repair requirements). The methodology for the updated analysis is the same as for the initial 1992 analysis, except EPA has also considered the changing market share of HFC equipment and compliance with the venting prohibition that would occur in the absence of the rule. This approach makes the screening analysis more consistent with the cost-benefit analysis discussed above. In the updated screening analysis, EPA estimates that 118 small businesses may incur compliance costs in excess of 1% of their sales, while 39 small businesses may incur compliance costs in excess of 3% of their sales for all aspects of the refrigerant recovery and recycling rule when taking all aspects of the rule under consideration (i.e., venting prohibition and sales restriction, refrigerant recycling and recovery equipment, and leak repair requirements). These numbers respectively represent 0.1% and 0.03% of the 122,416 small businesses that EPA estimates are affected by finalization of all three components of the NPRM.

EPA has concluded that when isolating portions of the analysis dealing with the clarification of the leak repair requirements for appliances using substitutes consisting of an ODS, that today's rulemaking will not have a significant economic impact on a substantial number of small entities. Since this rule does not finalize the proposal to extend the leak repair reporting and recordkeeping requirements, as summarized above in Section D. "Recordkeeping for Leak Repair," to appliances containing 50 pounds or more of a non-ODS substitutes, the remainder of this rule is viewed as a clarification of how the leak repair requirements for ODS refrigerants apply to appliances using ODS

substitutes. With this rulemaking EPA is stating that regulations affecting appliances using ODSs apply to refrigerants and substitutes alike, if they consist whole or in part of an ODS. In addition, it is assumed that ODS substitutes are replacing refrigerants whose manufacture and import is banned, restricted, or currently undergoing phaseout under the EPA phaseout regulations (40 CFR 82, part 82 subpart A). Therefore EPA assumes an impact of less than 1% upon owners or operators of appliances with refrigerant charges of 50 pounds or more, including the 0.1% and 0.03% of the 122,416 small businesses that EPA estimates would have been affected by finalizing all three components of the NPRM. Although this final rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. EPA has made numerous efforts to involve small entities in the rulemaking process and to incorporate flexibility into the proposed rule for small entities, where appropriate. Efforts to involve small entities include formal and informal stakeholder meetings, which included several trade groups representing small businesses, and a number of individual meetings with both small businesses and associations representing small businesses. EPA has also met with industry groups representing the commercial grocery and supermarket sectors. EPA has accepted and considered all comments and suggestions from trade organizations in finalizing this rule, regardless if the comments were received outside of the comment period. EPA has also developed outreach materials, including fact sheets which are available online and via the Ozone Hotline, to help small businesses to comply with the existing refrigerant recycling regulations and the prohibition on venting of both ozone-depleting refrigerants and their substitutes. Moreover, the proposed rule grants to small businesses working with substitutes the same flexibility that was granted to small businesses working with CFC and HCFC

refrigerants (58 FR 28667-28669, 28712).

#### **D. Unfunded Mandates Reform Act**

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with “Federal mandates” that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government Agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in



expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. This rule is not expected to have a high cost because it supplements the statutory self-effectuating prohibition against venting refrigerants by ensuring that certain service practices are conducted that reduce emissions of ozone-depleting refrigerants and their substitutes. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA. EPA has also determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. Thus, today's rule is not subject to the requirements of section 203 of the UMRA.

#### **E. Executive Order 13132: Federalism**

Executive Order 13132, entitled “Federalism” (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, Executive Order 13132 does not apply to this rule.

#### **F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments**

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal

Governments” (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.” This final rule does not have tribal implications, as specified in Executive Order 13175. Today's rule does not significantly or uniquely affect the communities of Indian tribal governments. Thus, Executive Order 13175 does not apply to this rule.

#### **G. Executive Order 13045: Protection of Children from Environmental Health & Safety**

##### **Risks**

Executive Order 13045: “Protection of Children from Environmental Health Risks and Safety Risks” (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be “economically significant” as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This rule amends the leak repair requires for appliances using substitutes consisting of an ozone-depleting substance, which in turn protects human health and the environment from increased amounts of UV radiation and increased incidence of skin cancer.

#### **H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution, or Use**

This rule is not subject to Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use” (66 FR 28355; May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

## **I. National Technology Transfer Advancement Act**

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (“NTTAA”), Public Law 104-113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. This rulemaking does not involve technical standards; therefore, EPA did not consider the use of any voluntary consensus standards in this rulemaking.

## **J. The Congressional Review Act**

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the Agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the Federal Register. A major rule cannot take effect until 60 days after it is published in the Federal

Register. This action is not a “major rule” as defined by 5 U.S.C. 804(2). It will become effective

[INSERT DATE 60 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER].

## List of Subjects in 40 CFR Part 82

Environmental protection, Air pollution control, Reporting and recordkeeping requirements.

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Dated:

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Michael O. Leavitt,

Administrator

For the reasons stated in the preamble, Title 40, Chapter I, Part 82, of the Code of Federal Regulations is amended as follows:

### **PART 82 - [AMENDED]**

1. The authority citation for part 82 continues to read as follows:

Authority: 42 U.S.C. 7414, 7601, 7671-7671q.

2. Section 82.152 is amended by revising the definition of “Full charge” and by adding a definition for “Leak rate” in alphabetical order to read as follows:

#### **§82.152 Definitions.**

\* \* \* \* \*

*Full charge* means the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

- (1) Use the equipment manufacturer’s determination of the correct full charge for the equipment;
- (2) Determine the full charge by making appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;
- (3) Use actual measurements of the amount of refrigerant added or evacuated from the

appliance; and/or

(4) Use an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge, and where records are maintained in accordance with § 82.166(q).

\* \* \* \* \*

*Leak rate* means the rate at which an appliance is losing refrigerant, measured between refrigerant charges. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate is calculated using only one of the following methods for all appliances located at an operating facility.

(1) *Method 1.* (i) *Step 1.* Take the number of pounds of refrigerant added to the appliance to return it to a full charge and divide it by the number of pounds of refrigerant the appliance normally contains at full charge;

(ii) *Step 2.* Take the shorter of the number of days that have passed since the last day refrigerant was added or 365 days and divide that number by 365 days;

(iii) *Step 3.* Take the number calculated in Step 1. and divide it by the number calculated in Step 2.;

and

(iv) *Step 4.* Multiply the number calculated in Step 3. by 100 to calculate a percentage. This method is summarized in the following formula:

$$\text{Leak rate} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365 \text{ days/year}}{\text{shorter of: \# days since refrigerant last added or 365 days}} \times 100\%$$

(% per year)

(2) *Method 2. (i) Step 1.* Take the sum of the quantity of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since leaks in the appliance were last repaired, if that period is less than one year),

(ii) *Step 2.* Divide the result of Step 1. by the quantity (e.g., pounds) of refrigerant the appliance normally contains at full charge, and

(iii) *Step 3.* Multiply the result of Step 2. by 100 to obtain a percentage. This method is summarized in the following formula:

$$\text{Leak rate} = \frac{\text{pounds of refrigerant added over past 365 days (or since leaks were last repaired, if that period is less than one year)}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

(% per year)

\* \* \* \* \*

3. Section 82.156 is amended by revising paragraphs (i)(3) introductory text, (i)(3)(i), (i)(3)(ii), (i)(5) introductory text, (i)(6)introductory text, and (i)(6)(i), to read as follows:

**§82.156 Required practices.**

\* \* \* \* \*

(i)(1) \* \* \*

(3) Owners or operators of industrial process refrigeration equipment and owners or operators of federally-owned commercial refrigeration equipment or of federally-owned comfort cooling appliances who are granted additional time under paragraphs (i)(1) or (i)(5) of this section, must have repairs performed in a manner that sound professional judgment indicates will bring the leak rate below the applicable allowable leak rate. When an industrial process shutdown has occurred or when repairs have been made while an appliance is mothballed, the owners or operators shall conduct an initial verification test at the conclusion of the repairs and a follow-up verification test. The follow-up verification test shall be conducted within 30 days of completing the repairs or within 30 days of bringing the appliance back on-line, if taken off-line, but no sooner than when the appliance has achieved normal operating characteristics and conditions. When repairs have been conducted without an industrial process shutdown or system mothballing, an initial verification test shall be conducted at the conclusion of the repairs, and a follow-up verification test shall be conducted within 30 days of the initial verification test. In all cases, the follow-up verification test shall be conducted at normal operating characteristics and conditions, unless sound professional judgment indicates that tests performed at normal operating characteristics and conditions will produce less reliable results, in which case the follow-up verification test shall be conducted at or near the normal operating pressure where practicable, and at or near the normal operating temperature where practicable.

(i) If the owners or operators of industrial process refrigeration equipment takes the appliance off-line, or if the owners or operators of federally-owned commercial refrigeration or of



federally-owned comfort cooling appliances who are granted additional time under paragraphs (i)(1) or (i)(5) of this section take the appliance off-line, they cannot bring the appliance back on-line until an initial verification test indicates that the repairs undertaken in accordance with paragraphs (i)(1)(i), (ii), (iii), or (i)(2)(i) and (ii), or (5)(i), (ii), and (iii) of this section have been successfully completed, demonstrating the leak or leaks are repaired. The owners or operators of the industrial process refrigeration equipment, federally-owned commercial refrigeration appliances, or federally-owned comfort cooling appliances are exempted from this requirement only where the owners or operators will retrofit or retire the industrial process refrigeration equipment, federally-owned commercial refrigeration appliance, or federally-owned comfort cooling appliance in accordance with paragraph (i)(6) of this section. Under this exemption, the owner or operators may bring the industrial process refrigeration equipment, federally-owned commercial refrigeration appliance, or federally-owned comfort cooling appliance back on-line without successful completion of an initial verification test.

(ii) If the follow-up verification test indicates that the repairs to industrial process refrigeration equipment, federally-owned commercial refrigeration equipment, or federally-owned comfort cooling appliances have not been successful, the owner or operator must retrofit or retire the equipment in accordance with paragraph (i)(6) and any such longer time period as may apply under paragraphs (i)(7)(i), (ii) and (iii) or (i)(8) (i) and (ii) of this section. The owners and operators of the industrial process refrigeration equipment, federally-owned commercial refrigeration equipment, or federally-owned comfort cooling appliances are relieved of this requirement if the conditions of paragraphs (i)(3)(iv) and/or (i)(3)(v) of this section are met.

\* \* \* \* \*

(5) Owners or operators of comfort cooling appliances normally containing more than 50 pounds of refrigerant and not covered by paragraph (i)(1) or (i)(2) of this section must have leaks repaired in accordance with paragraph (i)(9) of this section if the appliance is leaking at a rate such that the loss of refrigerant will exceed 15 percent of the total charge during a 12-month period, except as described in paragraphs (i)(6), (i)(8) and (i)(10) of this section and paragraphs (i)(5)(i), (i)(5)(ii) and (i)(5)(iii) of this section. Repairs must bring the annual leak rate to below 15 percent.

\* \* \* \* \*

(6) Owners or operators are not required to repair leaks as provided in paragraphs (i)(1), (i)(2), and (i)(5) of this section if, within 30 days of discovering a leak greater than the applicable allowable leak rate, or within 30 days of a failed follow-up verification test, or after making good faith efforts to repair the leaks as described in paragraph (i)(6)(i) of this section, they develop a one-year retrofit or retirement plan for the leaking appliance. Owners or operators who decide to retrofit the appliance must use a refrigerant or substitute with a lower or equivalent ozone-depleting potential than the previous refrigerant and must include such a change in the retrofit plan. Owners or operators who retire and replace the appliance must replace the appliance with an appliance that uses a refrigerant or substitute with a lower or equivalent ozone-depleting potential and must include such a change in the retirement plan. The retrofit or retirement plan (or a legible copy) must be kept at the site of the appliance. The original plan must be made available for EPA inspection upon request. The plan must be dated, and all work performed in accordance with the plan must be completed within one year of the plan's date, except as described in paragraphs (i)(6)(i), (i)(7), and (i)(8) of this section. Owners or operators are temporarily relieved of this obligation if the appliance has undergone system mothballing

as defined in §82.152.

(i) If the owner or operator has made good faith efforts to repair leaks from the appliance in accordance with paragraphs (i)(1), (i)(2), or (i)(5) of this section and has decided prior to completing a follow-up verification test, to retrofit or retire the appliance in accordance with paragraph (i)(6) of this section, the owner or operator must develop a retrofit or retirement plan within 30 days of the decision to retrofit or retire the appliance. The owner or operator must complete the retrofit or retirement of the appliance within one year and 30 days of when the owner or operator discovered that the leak rate exceeded the applicable allowable leak rate, except as provided in paragraphs (i)(7) and (i)(8) of this section.

\* \* \* \* \*

10. Section 82.166 is amended by revising paragraphs (n), (o)(4), (o)(7), (o)(8), (o)(10), and (q), and introductory paragraph (q) to read as follows:

**§82.166        Reporting and recordkeeping requirements.**

\* \* \* \* \*

(n) The owners or operators of appliances must maintain on-site and report to EPA Headquarters at the address listed in §82.160 the information specified in paragraphs (n)(1), (n)(2), and (n)(3) of this section, within the timelines specified under §82.156 (i)(1), (i)(2), (i)(3) and (i)(5) where such reporting or recordkeeping is required. This information must be relevant to the affected appliance.

(1) An initial report to EPA under §82.156(i)(1)(i), (i)(2), or (i)(5)(i) regarding why more than 30 days are needed to complete repairs must include: identification of the facility; the leak rate; the

method used to determine the leak rate and full charge; the date a leak rate above the applicable leak rate was discovered; the location of leaks(s) to the extent determined to date; any repair work that has been completed thus far and the date that work was completed; the reasons why more than 30 days are needed to complete the work and an estimate of when the work will be completed. If changes from the original estimate of when work will be completed result in extending the completion date from the date submitted to EPA, the reasons for these changes must be documented and submitted to EPA within 30 days of discovering the need for such a change.

(2) If the owners or operators intend to establish that the appliance's leak rate does not exceed the applicable allowable leak rate in accordance with §82.156(i)(3)(v), the owner or operator must submit a plan to fix other outstanding leaks for which repairs are planned but not yet completed to achieve a rate below the applicable allowable leak rate. A plan to fix other outstanding leaks in accordance with §82.156(i)(3)(v) must include the following information: the identification of the facility; the leak rate; the method used to determine the leak rate and full charge; the date a leak rate above the applicable allowable leak rate was discovered; the location of leaks(s) to the extent determined to date; and any repair work that has been completed thus far, including the date that work was completed. Upon completion of the repair efforts described in the plan, a second report must be submitted that includes the date the owner or operator submitted the initial report concerning the need for additional time beyond the 30 days and notification of the owner or operator's determination that the leak rate no longer exceeds the applicable allowable leak rate. This second report must be submitted within 30 days of determining that the leak rate no longer exceeds the applicable allowable leak rate.

(3) Owners or operators must maintain records of the dates, types, and results of all initial and follow-up verification tests performed under §82.156(i)(3). Owners or operators must submit this information to EPA within 30 days after conducting each test only where required under §82.156 (i)(1), (i)(2), (i)(3) and (i)(5). These reports must also include: identification and physical address of the facility; the leak rate; the method used to determine the leak rate and full charge; the date a leak rate above the applicable allowable leak rate was discovered; the location of leaks(s) to the extent determined to date; and any repair work that has been completed thus far and the date that work was completed. Submitted reports must be dated and include the name of the owner or operator of the appliance, and must be signed by an authorized company official.

\* \* \* \* \*

(o) \* \* \*

(4) The date a leak rate above the applicable allowable rate was discovered.

\* \* \* \* \*

(7) A plan to complete the retrofit or retirement of the system;

(8) The reasons why more than one year is necessary to retrofit or retire the system;

\* \* \* \* \*

(10) An estimate of when retrofit or retirement work will be completed. If the estimated date of completion changes from the original estimate and results in extending the date of completion, the owner or operator must submit to EPA the new estimated date of completion and documentation of the reason for the change within 30 days of discovering the need for the change, and must retain a dated copy of this submission.

\* \* \* \* \*

(q) Owners or operators choosing to determine the full charge as defined in §82.152 of an affected appliance by using an established range or using that methodology in combination with other methods for determining the full charge as defined in §82.152 must maintain the following information:

\* \* \* \* \*